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Gasohol, TBA (Tertiary Butyl Alcohol) MTBE (Methyl Tertiary Butyl Ether) Effects on Light-Duty Emissions

Southwest Research Inst.
San Antonio, TX

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by

Bruce B. Bykowski

Southwest Research Institute

San Antonio, Texas

FINAL REPORT

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Task No. 6

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Emission Control Technology Division

2565 Plymouth Road

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Approved:

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This report describes the laboratory testing of unleaded gasoline and gasoline mixtures containing ethanol, tertiary butyl alcohol (TBA), and methyl tertiary butyl ether (MTBE). Four different vehicles were employed in this study. Analytical procedures for the measurement of TBA and ethanol in exhaust and evaporative emissions were developed. Regulated and several unregulated emission rates were determined during the entire Federal Test Procedures (FTP) for each vehicle using several gasolines. The exhaust emission rates of hydrocarbons, (HC), carbon monoxide (CO), oxides of nitrogen (NO_x), individual hydrocarbons (IHC), and aldehydes are reported in grams per kilometer. Evaporative emissions for total hydrocarbons, TBA, and ethanol are reported in grams.

FOREWORD

This project was conducted for the U.S. Environmental Protection Agency by the Department of Emissions Research of Southwest Research Institute. The laboratory testing phase of the project began in October 1978 and was completed in June 1979. This project was conducted under EPA Contract No. 68-03-2377, Task 6 and was identified within Southwest Research Institute as Project 11-4493-001. The EPA Task Officer was Mr. Robert J. Garbe of the Emission Control Technology Division, Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, Michigan. The Southwest Research Institute Project Manager was Mr. Karl J. Springer. The project leaders were Bruce B. Bykowski and Harry E. Dietzmann.

TABLE OF CONTENTS

		Page
ABSTRACT		ii
FOREWORD		iii
LIST OF FIGURES		v
LIST OF TABLES		vi
I. SUMMARY		1
II. INTRODUCTION		2
A.	Objective	2
B.	Approach	2
C.	Scope	2
III. PREPARATIONS AND PROCEDURES		3
A.	Description of Vehicles	3
B.	Description of Fuels	3
C.	Test Procedures	6
D.	Test Plan	7
E.	Installation Photographs	7
IV. RESULTS		16
A.	1978 Malibu	16
B.	Mustang	18
C.	Saab	22
D.	Marquis	24
E.	Discussion of Results	28
REFERENCES		31

APPENDICES

A. Analytical Procedure for the Measurement of Tertiary Butyl Alcohol in Exhuast and SHED Evaporative Emissions
B. Analytical Procedure for the Measurement of Ethyl Alcohol in Exhaust and SHED Evaporative Emissions
C. Malibu FTP Results for Regulated and Unregulated Emissions with Seven Test Fuels
D. Mustang FTP Results for Regulated and Unregulated Emissions with Seven Test Fuels
E. Saab FTP Results for Regulated and Unregulated Emissions with Five Test Fuels
F. Marquis FTP Results for Regulated and Unregulated Emissions with Three Test Fuels

LIST OF FIGURES

Figure		Page
1	Typical Test Sequence	13
2	Vehicle Being Placed In Evaporative Emission Enclosure	14
3	Vehicles Being Tested In Evaporative Emission Enclosure and On Dynamometer	15
4	Malibu FTP and Evaporative Emissions	17
5	Mustang Total FTP Emissions	20
6	Saab FTP and Evaporative Emissions	23
7	Marquis FTP and Evaporative Emissions	26
8	Carbon Monoxide Emission Rate Summary For All Types of Test Fuels	29
9	Hydrocarbon Evaporative Emission Summary For All Types of Test Fuels	30

LIST OF TABLES

Table		Page
1	Vehicle Description	4
2	Fuel Specifications	5
3	Experimental Test Plan	8
4	Test Schedule	10
5	Malibu Average Unregulated Emissions Results	19
6	Mustang Average Unregulated Emissions Results	21
7	Saab Average Unregulated Emissions Results	25
8	Marquis Average Unregulated Emissions Results	27

I. SUMMARY

The effect of ethanol, tertiary butyl alcohol (TBA) and methyl tertiary butyl ether (MTBE) on exhaust and evaporative emissions was evaluated with several base fuels. Four catalyst equipped vehicles were set to manufacturer specifications and their fuel tanks modified with thermocouples and drain plugs. The vehicles were tested with several fuels in an evaporative emission enclosure and over the dynamometer portion of the Federal Test Procedure (FTP). The vehicles included in the test plan were a 1978 Malibu, a 1978 Mustang, a 1978 Saab, and a 1979 Marquis.

During each test, a series of regulated and unregulated emission tests were performed. Aldehydes, individual hydrocarbons, and the regulated emissions were meausred on all FTP tests with all fuel blends. Ethanol and TBA were measured in the exhaust and evaporative emissions for their respective fuel blends.

In general, the Marquis and Saab did not exhibit an increase in evaporative hydrocarbons, while the Mustang increased by a factor of three. The Malibu evaporative emissions increased between 30 and 40 percent. The design of the evaporative emission system and location of the carburetor in respect to engine heat probably caused the variations observed.

The CO exhaust emissions were reduced between 15 and 40 percent. There was no significant change in the HC and NO_x emissions between the base fuel and the fuel mixtures. The aldehydes and individual hydrocarbons in the exhaust remained relatively the same with the base fuel and fuel blends. The exception was methane which was about 20 percent less with the fuel blends. No significant quantities of ethanol or TBA was observed in the exhaust. The catalyst efficiency is apparently sufficient to completely oxidize any partially oxidized components (i.e., aldehydes, ethanol, TBA) in the exhaust.

II. INTRODUCTION

On June 14, 1976, Contract 68-03-2377 titled "Identification of Emissions from Gasolines Derived from Coal and Oil Shale" was authorized by the EPA Contracting Officer, Mr. Paul W. Quitter.

The original purpose of this project was to characterize gasoline which may be available from coal processing or from oil shale stocks in the future, and to determine exhaust emissions which are likely to result from the use of such fuels. Probable fuel composition have been determined through data on properties of stocks from coal and oil shale processing and a final report concerning this study phase of the project was submitted in December 1976 titled "Impact of Coal and Oil Shale Products of Gasoline Composition, 1976-2000, Task One, Final Report".

With the unavailability of liquids refined to gasoline from both shale oil or coal, the laboratory investigation of fuel effects on various types of gasoline burning engines was deferred. At the direction of the EPA Project Officer, the work efforts were redirected to assisting the EPA in determining possible deleterious effects of alcohol-gasoline mixtures. These efforts were specifically to establish the effect of the alcohol on increased evaporative emissions. The laboratory efforts were begun in October 1978 and were completed June 1979.

A. Objective

The objective of this project was to investigate the emission effects of gasoline mixtures containing ethanol, tertiary butyl alcohol (TBA) and methyl tertiary butyl ether (MTBE) on several light-duty vehicles. In addition to regulated emissions, a variety of unregulated gaseous emissions were determined using the gasoline mixtures. Evaporative emissions were also taken. These fuels are presently being considered as potential fuels of the future.

B. Approach

The experimental approach was to prepare the vehicles and equipment to perform both the evaporative enclosure portion and the dynamometer portion of the Federal Test Procedure. The vehicles were then tested with previously prepared gasolines containing the additives and compared to results generated with the base gasoline.

C. Scope

A total of four vehicles were employed in this study along with eight fuels. Initial testing used three vehicles and evaluated base fuels (Indolene, unleaded) and base fuel mixtures containing ethanol. Final testing employed two of the originally used vehicles in addition to a fourth vehicle. The final testing evaluated base fuels and base fuels containing TBA and MTBE. A total of 86 gaseous and evaporative tests were performed during this investigation. Replicate tests were conducted with each test fuel to establish test and vehicle repeatability.

III. PREPARATIONS AND PROCEDURES

This section describes the preparations, vehicles and equipment, fuels, test procedures, and test plan employed.

A. Description of Vehicles

Three vehicles were originally chosen by the Project Officer to be used. A 1978 Chevrolet Malibu and a 1978 Ford Mustang II were leased from a local leasing firm. A 1978 Saab 99 was loaned from the manufacturer to the EPA.

These vehicles were previously used during other EPA research efforts at SwRI and were available for use at the initiation of the project. Due to the priorities of other EPA projects, the Saab was only used for a part of the study and a 1979 Mercury Marquis was substituted to complete the investigation. The Marquis was also leased from a local leasing firm. The description of these vehicles are listed in Table 1. All the vehicles were adjusted to manufacturer specifications.

B. Description of Fuels

The various fuels tested used base fuels that meet the gasoline fuel specifications listed in the Federal Register[1]*. The eight fuels evaluated in the research effort are summarized below and the specifications listed in Table 2.

Fuel	Code	Description
A	EM-373-F	ASTM unleaded gasoline, EPA No. 3
B	EM-374-F	ASTM unleaded gasoline + 10% ethanol (mixed), EPA No. 4
C	EM-375-F	ASTM summer grade unleaded gasoline +10% ethanol (blended), EPA No. 6
D	EM-371-F	Indolene, EEE clear
E	EM-372-F	Indolene +10% ethanol, EEE gasohol
F	EM-389-F	Indolene, EEE clear
G	EM-385-F	Indolene +7% tertiary butyl alcohol (TBA), mixed
H	EM-386-F	Indolene +7% methyl tertiary alcohol (MTBE), mixed

The first five fuels were received from the EPA in sealed drums. There was a time delay in obtaining the TBA and MTBE additives from the refinery. A fresh batch of base fuel (No. F) was obtained from a local refinery to be used to make up fuels G and H. A fresh supply was used in order to assure that the light ends of the fuel were still present. Fuel F was chosen to be as similar to Fuel D as possible. Fuels G and H were prepared at SwRI. Care was taken to assure that the fuels were sealed, stored and prepared in a maximum ambient temperature of 21°C.

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* Numbers in parentheses are references listed at the end of this report.

TABLE 1. VEHICLE DESCRIPTION

	Vehicle Make			
	Chevrolet	Ford	Saab	Mercury
Year	1978	1978	1978	1979
Model	Malibu	Mustang II	99	Marquis
Body Type	2-dr	2-dr	2-dr	2-dr
Serial Number	1W27U8Z434207	8F02F187610	99781008246	9263H519763
GVMR, kg(lb)	2052 (4523)	1857 (4095)	1728 (3810)	2434 (5365)
Engine Displacement, $\ell(in^3)$	5.00 (305)	4.95 (302)	1.98 (121)	5.75 (351)
Engine Family	810Y2V 8BCV	302 "D" (1x95)	B120CA	5.8W "BV" (2TT95x95)
Emission Controls				
Catalysts	pelleted oxidation	monolith oxidation	3-way	dual bed
Air Pump	Yes	No	No	Yes
EGR	Yes	Yes	No	No
Chassis Dyanmometer Settings				
Inertia, kg (lbs)	1590 (3500)	1590 (3500)	1360 (3000)	2040 (4500)
Power, kW(hp)	8.0 (10.7)	9.2 (12.3)	8.4 (11.3)	8.9 (12.0)
Fuel Tank Capacity, ℓ(gal)	68.5 (18.1)	62.5 (16.5)	54.9 (14.5)	71.9 (19.0)

TABLE 2. FUEL SPECIFICATIONS

Item	Fuel					
Code	EM-373-F	EM-374-F	EM-375-F	EM-371-F	EM-372-F	EM-389-F
Octane	92.3	94.8	96.4	96.5	98.9	97.0
Distillation range:						
IBP, °C	26	25	30	27	30	27
5%	41	41	44	43	47	44
10%	49	48	51	55	52	56
20%	61	56	59	71	60	75
30%	77	61	71	87	67	92
40%	93	96	85	99	74	101
50%	111	114	112	107	101	108
60%	137	129	134	114	111	114
70%	143	137	149	131	124	126
80%	161	150	166	142	137	134
90%	184	185	183	163	160	162
95%	197	193	196	168	166	170
End Point	231	210	211	184	176	193
RVP, kPa(psi)	68.9 (10.0)	75.2 (10.9)	68.9 (10.0)	62.1 (9.0)	66.2 (9.6)	62.7 (9.1)
Hydrocarbon Composition						
Olefins, %	17.2	16.6	17.6	0.4	0.6	0.5
Aromatics, %	29.8	28.9	34.6	28.5	25.7	30.0
Saturates, %	53.0	54.5	47.8	71.1	73.7	69.5

C. Test Procedures

All exhaust and evaporative emission tests were conducted in accordance with the Federal Test Procedure[1]. Several unregulated emissions were also measured. Some of these procedures are documented in a recent EPA report prepared by SwRI[2] while others were developed as part of this program.

1. Regulated Emissions

All vehicle fueling and emission tests were performed according to the procedures set forth in the Federal Register[1]. The evaporative emission loses (HC), gaseous emissions of hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NO_x) were collected and analyzed using the procedures and equipment described in the gasoline FTP. The evaporative emission enclosure (SHED) and related equipment was constructed according to the requirements published in the Federal Register[1]. The running loss test portion of the evaporative emission test, which is optional, was not performed.

The fueling of the vehicles employed a drum cooler to maintain a maximum fuel temperature of 14°C. The tests were performed on a Clayton chassis dynamometer. A constant volume sampler (CVS) with a nominal capacity of 0.14 cubic meters per second (300 CFM) was used.

2. Unregulated Emissions

The unregulated emissions measured in this study were aldehydes, individual hydrocarbons, ethanol and tertiary butyl alcohol. The aldehyde and individual hydrocarbon procedures were employed during the dynamometer run portion of the FTP. The ethanol and TBA procedures were used selectively during both the dynamometer run and the evaporative emission run.

The aldehydes were measured using the 2,4 dinitrophenylhydrazine (DNPH) method[2]. The method consists of withdrawing a continuous sample of dilute exhaust and bubbling the sample through glass impingers containing DNPH in hydrochloric acid. This forms the aldehydes' phenylhydrazone derivative which are eventually injected into a gas chromatograph using a flame ionization detector for separation and identification.

The term individual hydrocarbons is used to define the collection and analysis of the following compounds: methane, ethane, ethylene, acetylene, propane, propylene, benzene and toluene. The individual hydrocarbon (IHC) procedure[2] consists of collecting dilute sample in Tedlar (DuPont Co.) bags and injecting samples from the bags into a four column gas chromatograph for separation and identification.

The tertiary butyl alcohol (TBA) procedure was developed during this research effort in order to measure any TBA emissions due to the addition of TBA to base gasoline. During the dynamometer run portion of the FTP, a continuous sample of dilute exhaust was bubbled through glass

impingers containing deionized water. During the evaporative emissions portion of the FTP, two samples were withdrawn from the SHED into Tedlar bags. One bag was collected during the first minute after the SHED door was sealed and the second bag was obtained during the minute prior to the end of the SHED test. High sample flow rates were employed to remove a large sample from the SHED in a short time. The contents of the bag was then drawn through impingers at the same flowrate as the sample collected during the FTP. A sample from each impinger was injected into a gas chromatograph using a flame ionization detector for quantitative analysis. A detailed description of the analytical procedure for the measurement of TBA in exhaust or evaporative emission is presented in Appendix A.

The ethanol procedure was also developed during this investigation in order to measure any ethanol emissions from fuels containing ethanol. During both the dynamometer run and SHED portion of the FTP, a continuous sample of either dilute exhaust or SHED contents was drawn into a Tedlar bag. A sample from the bag was injected into a gas chromatograph using a flame ionization detector for separation and quantification. The detailed description of the analytical procedure for the measurement of ethanol in exhaust or evaporative emissions is presented in Appendix B.

A procedure for the analysis of methyl tertiary butyl ether (MTBE) was attempted without success. A suitable trapping media and the similarity of MTBE with other compounds in gasoline caused problems with collection separation and quantification. After a reasonable effort, the Project Officer requested a discontinuation of this procedural development.

D. Test Plan

The test plan and schedule are listed in Table 3 and Table 4. Figure 1 shows a typical test sequence.

E. Installation Photographs

Figures 2 and 3 are photographs of the test cell where this investigation was performed. Figure 2 shows the Malibu being pushed into the evaporative emission enclosure (SHED) after completing the dynamometer portion of the FTP. The Saab has been pushed on the dynamometer after its removal from the SHED to undergo the dynamometer run. The operator in the right of the picture is calibrating the hydrocarbon analyzer and monitoring pertinent temperatures prior to the sealing of the enclosure.

Figure 3 shows the test cell several minutes later. The Malibu is completing the hot soak portion of the evaporative emissions test while the Saab is completing the dynamometer run. The Malibu will leave the SHED in time to remove the Saab and push it into the SHED. This type of test schedule will enable the optimum number of vehicles to be tested in the shortest period of time.

TABLE 3. EXPERIMENTAL TEST PLAN

Step	Item
1	Perform calibration and retention check on SHED.
2	Develop procedure for ethanol collection and analysis.
3	Develop procedure for tertiary butyl alcohol collection and analysis.
4	Develop procedure for methyl tertiary butyl ether collection and analysis.
5	Store received fuels in cold room.
6	Prepare 4 drums of 7% TBA + EM-389-F in cold room.
7	Prepare 4 drums of 7% MTBE + EM-389-F in cold room.
8	Modify fuel tanks on each vehicle with drain plugs and thermocouples.
9	Drain and refuel each vehicle to 20 percent tank capacity with proper fuel.
10	Run one LA-4 cycle. Check idle CO and RPM first time on each fuel and vehicle.
11	Hot soak one hour.
12	Drain and refuel each vehicle to 40 percent capacity.
13	Run another LA-4 cycle.
14	Soak each vehicle 12-24 hours @ 20-30°C.
15	Perform pretest of facility and instrument calibrations.
16	Prepare sample bags and impingers.
17	Run 3-bag FTP with evaporative emissions by: a. Drain and refuel to 40 percent capacity. (fuel cap off). b. Push vehicle into SHED. c. Perform one hour diurnal heat build. (fuel cap on at 15.5°C). Take bag samples from SHED at same points the HC is taken, if required. d. Immediately after heat build remove heat blanket and push vehicle onto dynamometer. e. Run 3-bag FTP emissions tests within 15 to 60 minutes. f. Run one hour hot soak immediately following emissions test. Take bag samples from SHED of the same points the HC is taken, if required.

TABLE 3 (Cont'd). EXPERIMENTAL TEST PLAN

Step	Item
18	Precondition for next test. a. If within 24 hours of FTP and will use the same fuel, go to Step 12. b. If longer than 24 hours since FTP or if changing fuel, go to Step 9.
19	Follow test plan from Step 9 through Step 18 for each fuel and vehicle listed in the Test Schedule.

TABLE 4. TEST SCHEDULE

Test No.	Date	Car	Fuel	Analyses
1-1	11-10-78	Malibu	EM-373-F	1,2,3,4
11-1	11-11-78	Mustang	EM-373-F	1,2,3,4
21-1	11-10-78	Saab	EM-373-F	1,2,3,4
1-2	11-11-78	Malibu	EM-373-F	1,2,3,4
11-2	11-16-78	Mustang	EM-373-F	1,2,3,4
21-2	11-11-78	Saab	EM-373-F	1,2,3,4
1-3	11-16-78	Malibu	EM-373-F	1,2,3,4
11-3	11-17-78	Mustang	EM-373-F	1,2,3,4
21-3	11-17-78	Saab	EM-373-F	1,2,3,4
1-4	11-17-78	Malibu	EM-373-F	1,2,3,4
11-4	11-21-78	Mustang	EM-373-F	1,2,3,4
21-4	11-20-78	Saab	EM-373-	1,2,3,4
1-5	11-21-78	Malibu	EM-373-F	1,2,3,4
2-1	11-12-78	Malibu	EM-374-F	1,2,3,4,5
12-1	11-12-78	Mustang	EM-374-F	1,2,3,4,5
22-1	11-12-78	Saab	EM-374-F	1,2,3,4,5
2-2	11-13-78	Malibu	EM-374-F	1,2,3,4,5
12-2	11-13-78	Mustang	EM-374-F	1,2,3,4,5
22-2	11-13-78	Saab	EM-374-F	
22-3	11-14-78	Saab	EM-374-F	1,2,3,4,5
22-4	11-21-78	Saab	EM-374-F	1,2,3,4,5
3-1	11-15-78	Malibu	EM-375-F	1,2,3,4,5
13-1	11-14-78	Mustang	EM-375-F	1,2,3,4,5
23-1	11-15-78	Saab	EM-375-F	1,2,3,4,5
3-2	11-20-78	Malibu	EM-375-F	1,2,3,4,5
13-2	11-15-78	Mustang	EM-375-F	1,2,3,4,5
23-2	11-16-78	Saab	EM-375-F	1,2,3,4,5
4-1	11-27-78	Malibu	EM-371-F	1,2,3,4
14-1	11-27-78	Mustang	EM-371-F	1,2,3,4
24-1	11-27-78	Saab	EM-371-F	1,2,3,4
4-2	11-28-78	Malibu	EM-371-F	1,2,3,4
14-2	11-27-78	Mustang	EM-371-F	1,2,3,4
24-2	11-28-78	Saab	EM-371-F	1,2,3,4

TABLE 4 (Cont'd). TEST SCHEDULE

Test No.	Date	Car	Fuel	Analyses
4-3	12-04-78	Malibu	EM-371-F	1,2,3,4
14-3	12-04-78	Mustang	EM-371-F	1,2,3,4
24-3	12-04-78	Saab	EM-371-F	1,2,3,4
4-4	12-05-78	Malibu	EM-371-F	1,2,3,4
14-4	12-05-78	Mustang	EM-371-F	1,2,3,4
24-4	12-05-78	Saab	EM-371-F	1,2,3,4
5-1	11-29-78	Malibu	EM-372-F	1,2,3,4,5
15-1	11-29-78	Mustang	EM-372-F	1,2,3,4,5
25-1	11-29-78	Saab	EM-372-F	1,2,3,4,5
5-2	11-30-78	Malibu	EM-372-F	1,2,3,4,5
15-2	11-30-78	Mustang	EM-372-F	1,2,3,4,5
25-2	11-30-78	Saab	EM-372-F	1,2,3,4,5
5-3	12-01-78	Malibu	EM-372-F	1,2,3,4,5
15-3	12-01-78	Mustant	EM-372-F	1,2,3,4,5
25-3	12-01-78	Saab	EM-372-F	1,2,3,4,5
6-1	5-08-79	Malibu	EM-389-F	1,2,3,4
16-1	5-08-78	Mustang	EM-389-F	1,2,3,4
36-1	5-08-79	Marquis	EM-389-F	1,2,3,4
6-2	5-09-79	Malibu	EM-389-F	1,2,3,4
16-2	5-09-79	Mustang	EM-389-F	1,2,3,4
36-2	5-09-79	Marquis	EM-389-F	1,2,3,4
6-3	5-10-79	Malibu	EM-389-F	1,2,3,4
16-3	5-10-89	Mustang	EM-389-F	1,2,3,4
36-3	5-10-79	Marquis	EM-389-F	1,2,3,4
6-4	5-22-79	Malibu	EM-389-F	1,2,3,4
16-4	5-22-79	Mustang	EM-389-F	1,2,3,4
36-4	5-22-79	Marquis	EM-389-F	1,2,3,4
6-5	5-23-79	Malibu	EM-389-F	1,2,3,4
16-5	5-23-79	Mustang	EM-389-F	1,2,3,4
36-5	5-23-79	Marquis	EM-389-F	1,2,3,4
6-6	5-24-79	Malibu	EM-389-F	1,2,3,4
7-1	5-14-79	Malibu	EM-385-F	1,2,3,4,5
17-1	5-14-79	Mustang	EM-385-F	1,2,3,4,5
37-1	5-14-79	Marquis	EM-385-F	1,2,3,4,5

TABLE 4 (Cont'd). TEST SCHEDULE

Test No.	Date	Car	Fuel	Analyses
7-2	5-15-79	Malibu	EM-385-F	1,2,3,4,5
17-2	5-15-79	Mustang	EM-385-F	1,2,3,4,5
37-2	5-15-79	Marquis	EM-385-F	1,2,3,4,5
7-3	5-25-79	Malibu	EM-385-F	1,2,3,4,5
8-1	5-16-79	Malibu	EM-386-F	1,2,3,4
18-1	5-16-79	Mustang	EM-386-F	1,2,3,4
38-1	5-16-79	Marquis	EM-386-F	1,2,3,4
8-2	5-17-79	Malibu	EM-386-F	1,2,3,4
18-2	5-17-79	Mustang	EM-386-F	1,2,3,4
38-2	5-17-79	Marquis	EM-386-F	1,2,3,4

Analyses

1 = Continuous hydrocarbon
2 = CVS bags for CO, HC, NO_x
3 = DNPH (aldehydes)
4 = Individual hydrocarbons
5 = Additive analysis

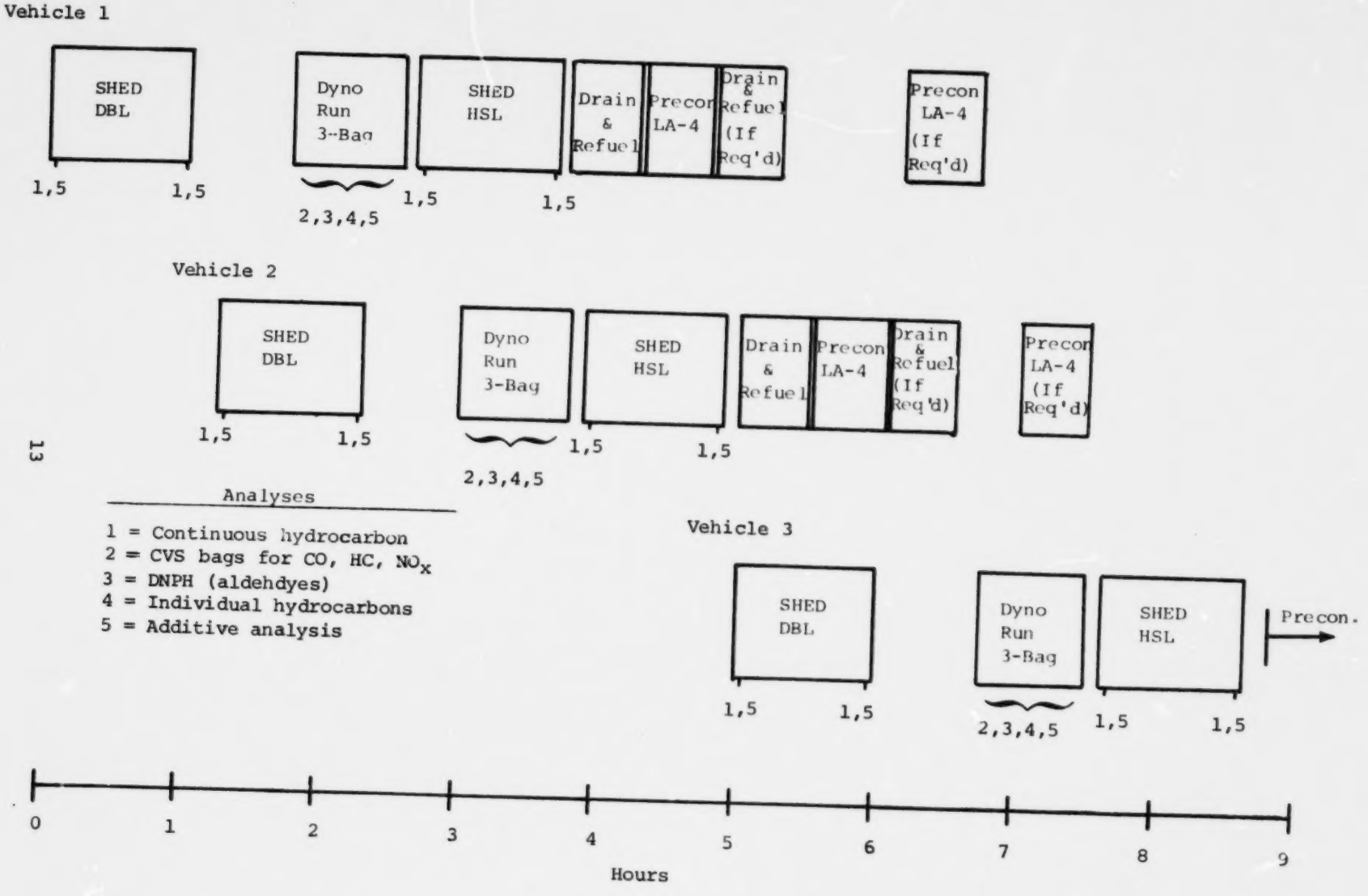

Figure 1. Typical Test Sequence

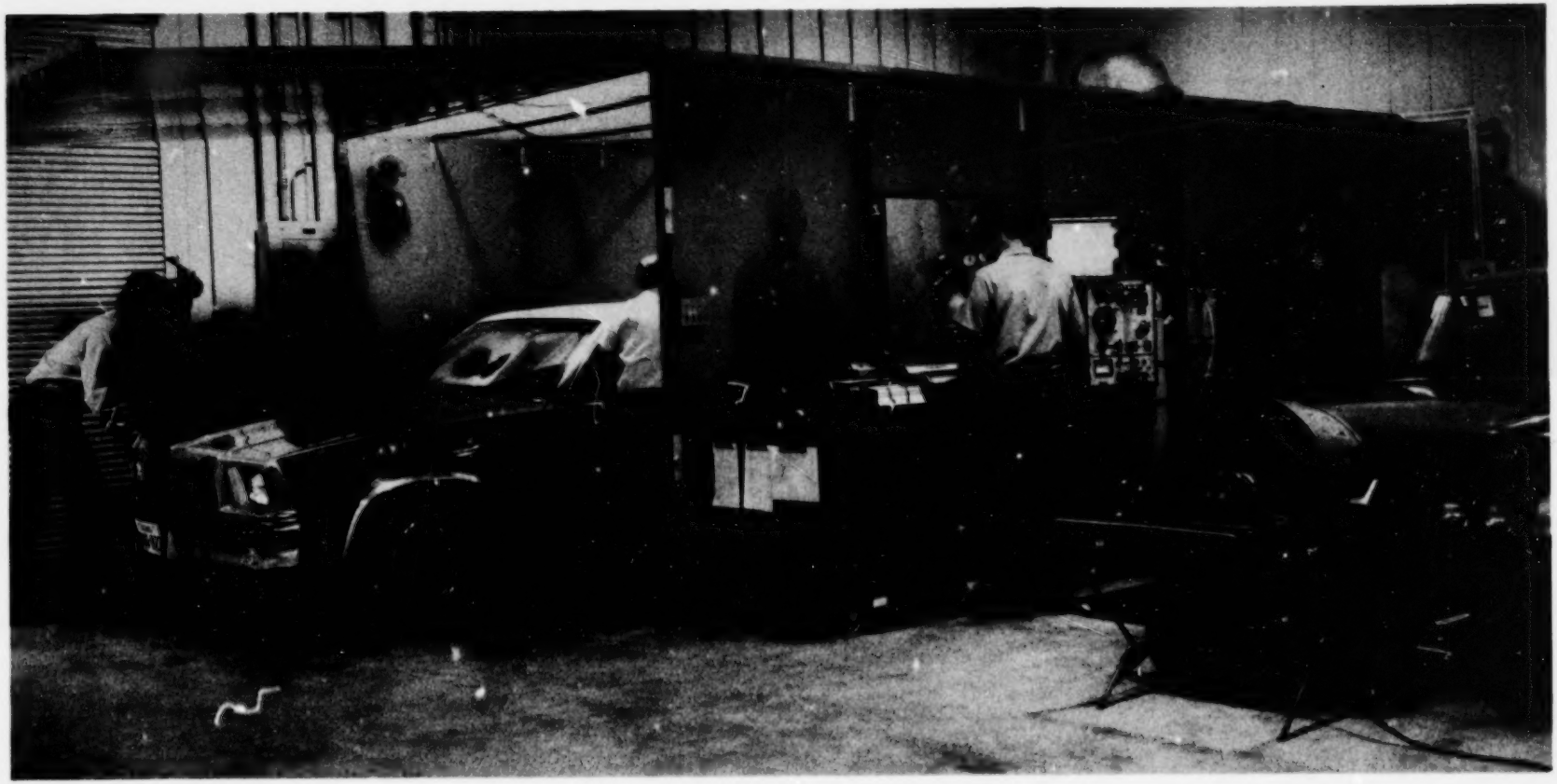

Figure 2. Vehicle Being Placed In Evaporative Emission Enclosure

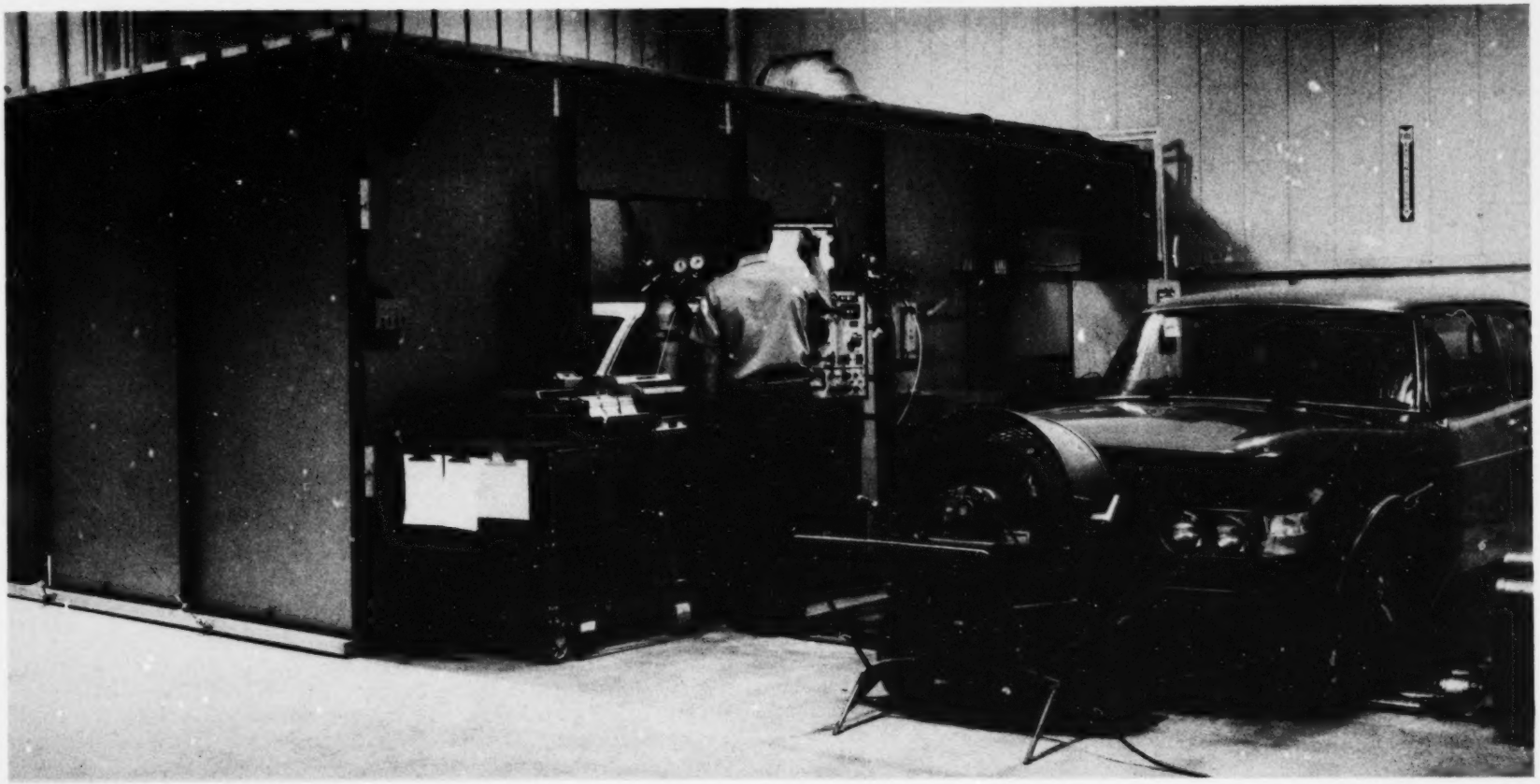

Figure 3. Vehicles Being Tested In Evaporative Emission Enclosure And On Dynamometer

IV. RESULTS

This section describes the exhaust and evaporative emission results for each vehicle with the various test fuels. Comparisons are made between the fuel blends and its respective base fuel for each vehicle.

A. 1978 Malibu

Regulated and several unregulated emissions were measured during the FTP driving cycle. In addition, the ethanol and TBA, SHED and exhaust emissions were determined for those fuels containing the respective additive.

1. Regulated Emissions

The regulated emission results for each fuel with the Malibu are presented in Tables C-4 through C-30 of Appendix C. These tables have been summarized and the CO, HC, and NO_x emission rates are listed in Table C-1 along with the HC evaporative emission. In order to provide a visual comparison of the base fuel and fuel blends, the average emission rates have been plotted as a bar graph in Figure 4.

The gaseous emissions from the dynamometer run indicated no significant changes in HC and NO_x emissions for all eight fuels. The ethanol, TBA, and MTBE fuel mixtures did, however, reduce the CO emissions between 20 and 40 percent of their respective base fuels.

Table C-1 also contains fuel consumption values. These values were calculated by the computer using a carbon balance procedure. The carbon balance procedure uses the carbon to hydrogen ratio of the fuel and exhaust compounds containing carbon to establish a balance. The computer normally calculates fuel consumption based on clear Indolene's carbon to hydrogen ratio of 1:1.85. It was not within the scope of this research effort to determine the ratio for each fuel and change the computer format to accept the various ratios. All of the fuel consumption values in the computer printouts are based on a carbon to hydrogen ratio of 1:1.85 and therefore do no reflect the actual gain or loss in fuel consumption using the various fuel mixtures.

There was no significant difference in the HC evaporative emissions of the base fuel (Fuel A, EM-373-F) and the two ethanol blends (Fuel B, EM-374-F and Fuel C, EM-375-F). A noticeable difference was observed between the winter grade base fuel (Fuel D, EM-371-F) and the respective 10 percent ethanol blend (Fuel E, EM-372-F). The increase in the evaporative emissions was about 40 percent due to the ethanol in the winter grade fuel.

A second batch of base fuel was used with the two additives, TBA and MTBE. The 7 percent TBA in the base fuel had essentially no effect on the evaporative emissions. This was not observed with the MTBE blend (Fuel H, EM-386-F) where a 36 percent increase in evaporative emissions was observed.

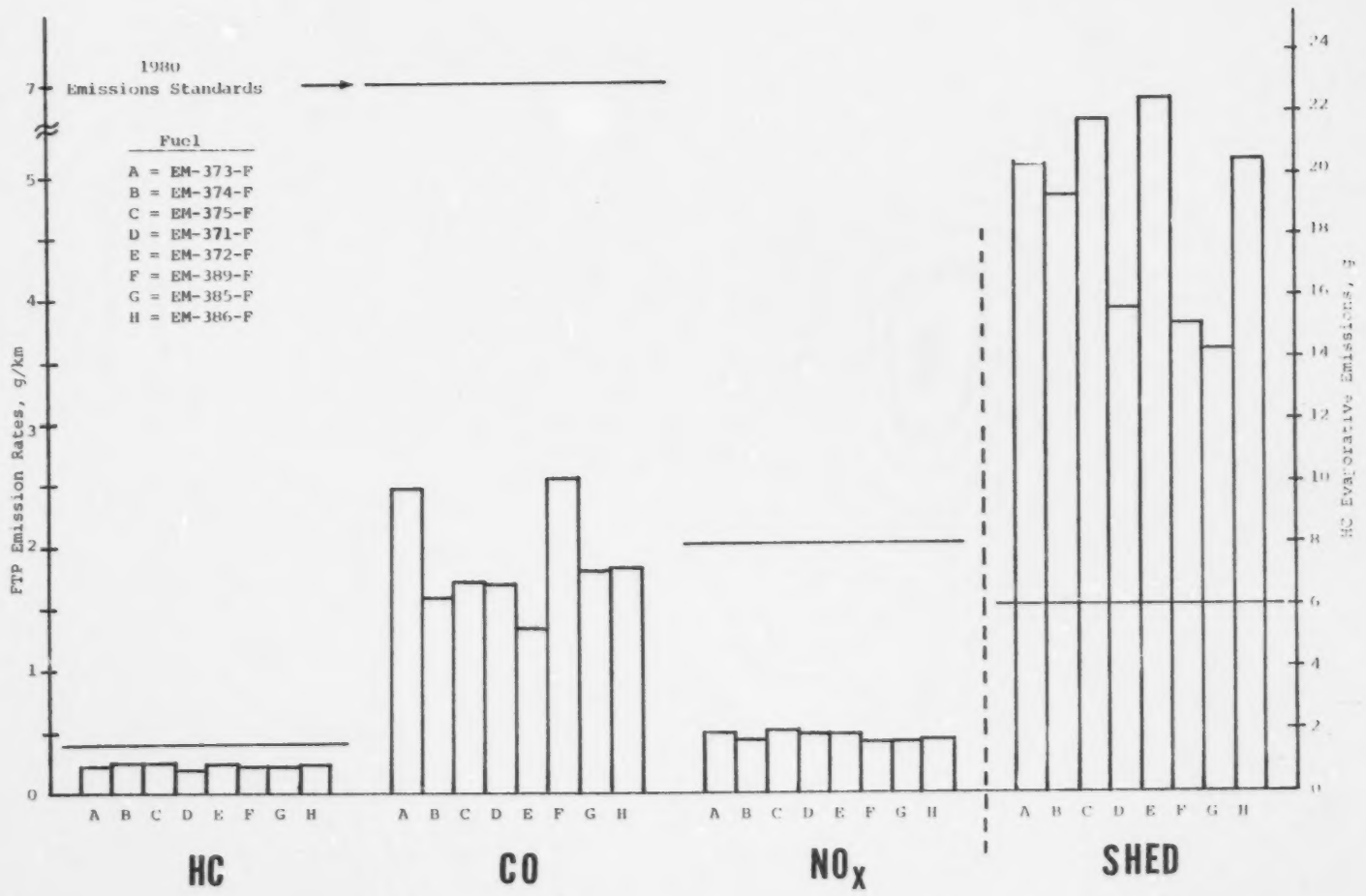

Figure 4. Malibu FTP and Evaporative Emissions

2. Unregulated Emissions

Aldehyde, individual hydrocarbons (IHC), and ethanol or TBA concentrations were measured during the dynamometer portion of the FTP. The average of the data runs are summarized in Table 5. The data for each individual run is presented in Table C-2 and C-3 of Appendix C. The aldehyde emissions generally increased using the fuels containing ethanol, TBA and MTBE. It should be noted, however, that the aldehyde data was somewhat scattered due to the observed (low) concentrations approaching the detection limits of the analytical method. There was no significant change in the individual hydrocarbons due to the ethanol, TBA or MTBE. The only exception to this was that the methane emission rates were about 20 percent lower with TBA and MTBE than the corresponding base fuel. No ethanol or TBA was observed in the exhaust (MTBE measurements were not made).

The ethanol evaporative emission rates typically ranged from 2-3 g/test. The TBA evaporative emissions ranged from 3-7 g/test accounting for a estimated 15-25 percent of the evaporative hydrocarbons. It should be noted that the total hydrocarbon values obtained from the SHED are as measured and are not corrected for ethanol, TBA or MTBE FID responses.

B. Mustang

Regulated and several unregulated emission results were obtained during the entire FTP using several gasolines and gasoline mixtures of ethanol, TBA and MTBE.

1. Regulated Emissions

The results of each individual run for regulated emissions is presented as Tables D-4 through D-27 of Appendix D. The HC, CO and NO_x emission rates are summarized in Table D-1. The average emission rate for the FTP exhaust and SHED emissions is presented as the bar graph in Figure 5. As illustrated, essentially no change in the HC exhaust emissions was observed with the fuel blends. This was not the case where the NO_x levels decreased slightly (about 15 percent) with the base fuel with ethanol. With TBA and MTBE, the NO_x emissions increased by 10 percent relative to the base fuel. The CO emission rates decreased with all fuel blends, ranging from a 15-30 percent reduction.

The average hydrocarbon evaporative emissions for each test fuel is presented in Figure 5. The HC evaporative emissions increased by a factor of three with the ethanol blends, doubled with the TBA blend while increasing only slightly with the MTBE blend. The Mustang was the most sensitive to the fuel blend composition.

2. Unregulated Emissions

During the dynamometer portion of the FTP, aldehyde and individual hydrocarbons were measured. Measurements for TBA and ethanol were made also when fuels containing these components were used. The data are averaged and summarized in Table 6. The data for each individual run is listed in Table D-2 and D-3 of Appendix D. The low concentrations of aldehydes observed

TABLE 5. MALIBU AVERAGE UNREGULATED EMISSIONS RESULTS

Average Aldehyde, mg/km

Fuel	Form.	Acet.	Acetone*	Isobuty.	Methylethyl Ketone	Croton.	Hexan.	Benzene	Total
EM-373-F	1.51	0.34	0.09	0	0.06	--	0.11	0.08	2.19
EM-374-F	1.12	0.50	0.28	0	0.03	--	0	0	1.92
EM-375-F	1.71	0.59	0.03	0	0.06	--	0.06	0	2.45
EM-371-F	0.93	0.06	0.06	0	0.12	--	0.16	0	1.33
EM-372-F	1.72	0.54	0.08	0	0.10	--	0.17	0.31	2.92
EM-389-F	0.56	0	0	0	0	0.01	0	0.43	1.01
EM-385-F	1.59	0.37	0.19	0	0	0.06	0	0.41	2.61
EM-386-F	0.84	0.06	0.13	0	0	0.06	0	0.81	1.90

* Includes acrolein and propanol

Average Individual Hydrocarbon, mg/km

Fuel	Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toluene
EM-373-F	46.96	19.99	10.00	2.40	4.16	3.34	6.95	7.59
EM-374-F	45.54	21.66	10.36	2.73	1.41	4.13	6.06	8.32
EM-375-F	44.00	20.91	10.19	3.64	1.68	3.79	7.55	8.49
EM-371-F	43.31	10.44	9.73	1.16	1.80	4.08	2.94	8.10
EM-372-F	38.38	10.69	10.05	2.77	2.05	3.27	2.24	7.97
EM-389-F	57.98	12.57	8.90	1.99	1.96	5.02	5.29	26.76
EM-385-F	45.24	10.89	9.67	1.49	2.11	4.17	4.04	20.71
EM-386-F	45.18	11.13	9.72	1.74	2.15	4.35	3.45	19.98

Fuel	Date	Component	Evaporative, g DBL	HSL	Total	FTP, g/km
EM-372-F	11-29-78	Ethanol	1.45	1.61	3.06	0
EM-372-F	11-30-78	Ethanol	1.60	1.61	3.21	0
EM-372-F	12-1-78	Ethanol	0.96	0.48	1.44	0
EM-374-F	11-12-78	Ethanol	1.77	1.14	2.91	0
EM-374-F	11-13-78	Ethanol	1.67	0.48	2.15	0
EM-375-F	11-15-78	Ethanol	1.88	0.32	2.20	0
EM-375-F	11-20-78	Ethanol	1.51	0.43	1.94	0
EM-385-F	5-14-79	TBA	0.65	0.06	0.71	0
EM-385-F	5-15-79	TBA	0.19	0.06	0.25	0
EM-385-F	5-25-79	TBA	0.40	0.05	0.45	0

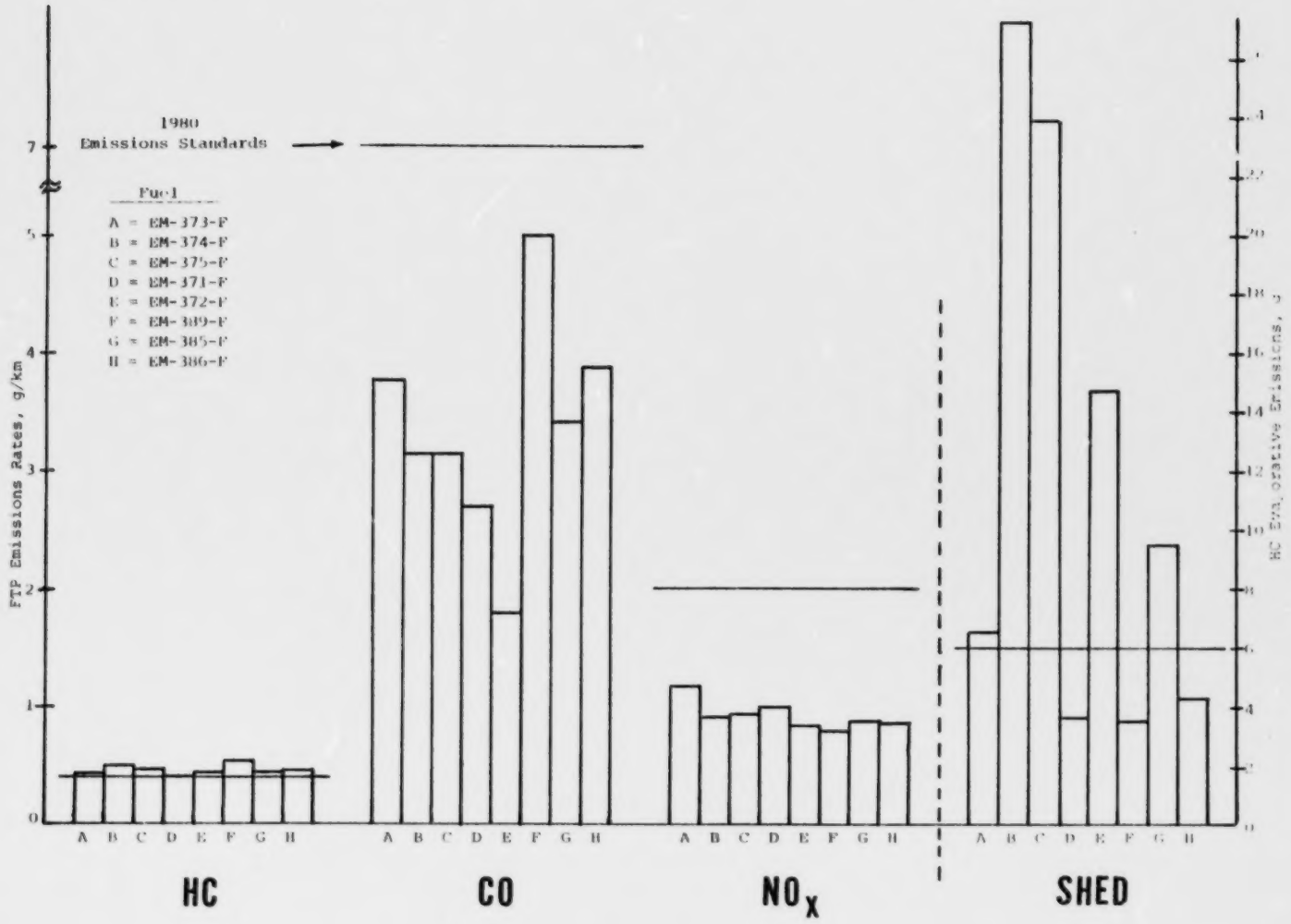

Figure 5. Mustang Total FTP Emissions

TABLE 6. MUSTANG AVERAGE UNREGULATED EMISSIONS RESULTS

Average Aldehyde, mg/km

Fuel	Form.	Acet.	Acetone*	Isobuty.	Methylethyl Ketone	Croton	Hexan.	Benzene	Total
EM-373-F	1.36	0.17	0.04	0	0.04	0	0.12	0.28	1.96
EM-374-F	1.34	1.06	0.41	0	0.10	0	0.10	1.28	4.39
EM-375-F	2.15	2.02	0.34	0.06	0.06	0	0.13	1.28	6.06
EM-371-F	1.43	0	0.06	0	0.16	0	0.19	0.31	2.18
EM-372-F	1.47	0.91	0.10	0	0.06	0	0.17	0.47	3.18
EM-389-F	1.39	0.25	0.08	0.10	0.06	0	0	1.59	2.62
EM-385-F	2.27	0.34	0.16	0.19	0	0.03	0	1.40	4.38
EM-386-F	0.44	0.03	0	0	0	0.12	0	0.19	1.09

* Includes acrolein and propanol

Average Individual Hydrocarbon, mg/km

Fuel	Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toluene
EM-373-F	49.92	32.87	22.47	1.70	4.89	14.48	16.22	13.80
EM-374-F	56.83	36.29	23.93	3.17	4.54	11.81	16.75	21.94
EM-375-F	50.18	35.51	21.50	1.55	13.55	11.72	16.41	18.70
EM-371-F	43.54	16.75	24.07	3.06	6.23	11.37	10.29	25.91
EM-372-F	46.32	15.74	24.65	1.70	6.77	11.07	6.81	22.31
EM-389-F	58.17	23.19	20.64	2.57	4.66	28.30	21.46	72.03
EM-385-F	45.37	20.10	19.61	1.59	5.16	12.71	11.99	59.13
EM-386-F	46.20	14.98	17.00	2.09	3.95	9.82	10.13	53.25

Fuel	Date	Component	Evaporative, g DBL	HSL	Total	FTP, g/km
EM-372-F	11-29-78	Ethanol	0.01	5.42	5.43	0
EM-372-F	11-30-78	Ethanol	0.12	6.39	6.51	0
EM-374-F	11-12-78	Ethanol	0.06	11.50	11.56	0
EM-374-F	11-13-78	Ethanol	0.05	9.47	9.52	0
EM-375-F	11-14-78	Ethanol	0.06	9.38	9.44	0
EM-375-F	11-15-78	Ethanol	0.09	8.04	8.13	0
EM-385-F	5-14-79	TBA	0	1.10	1.10	0
EM-385-F	5-15-79	TBA	0	1.32	1.32	0

caused some scatter as seen before. Generally the total aldehydes increased using fuels containing ethanol and TBA. Fuel H, MTBE mixture, may have reduced total aldehydes by forming less formaldehyde as the data indicated. The individual hydrocarbons remained fairly consistent within each group of base fuel and mixtures. Again, there was no significant change in the individual hydrocarbons due to the ethanol, TBA and MTBE. The only exception was methane, which was reduced by about 20 percent with TBA and MTBE. Ethanol and tertiary butyl alcohol were not detected in the exhaust. The oxidation catalyst on this vehicle probably oxidized any unburnt alcohols.

Table 6 also contains the evaporative alcohol emissions. The results are repeatable for each fuel tested and indicate that most of the alcohol evaporative losses occur during the hot soak portion of the SHED test. During the hot soak portion, which occurs immediately after the dynamometer run, the vehicles engine is hot. The carburetor fuel bowl on this vehicle is very close to the intake manifold. This position could cause a fuel with a lower boiling point, such as the alcohol mixture, to boil out more readily than the base fuel.

The ethanol evaporative emission rates were about 6 g/test for the summer grade ethanol blends accounting for about 25 percent of the total HC evaporative emission. The ethanol evaporative emission rate increased to 11 g/test with the winter grade fuel accounting 65 percent of the hydrocarbons (on an as-measured basis with no FID response factors applied). Those tests with the TBA indicate that the TBA accounts for essentially all of the SHED HC evaporatove emissions.

C. Saab

Gasolines and gasolines containing ethanol were evaluated during the evaporative emission enclosure and dynamometer portion of the FTP. Regulated and several unregulated emissions were measured.

1. Regulated Emissions

The regulated emission results for each individual run is presented in Table E-3 through E-20 of Appendix E. The HC, CO and NO_x emission rates for these tests have been summarized in Table E-1. Figure 6 illustrates comparison of the average emission rate for HC, CO, and NO_x from the FTP and HC from SHED tests. As illustrated, there were no significant changes in the HC and NO_x FTP emission rates due to the ethanol, whereas there was a definite decrease (approximately 10-20 percent) in the CO emission with both ethanol blends. The HC evaporative emissions were essentially unaffected by the ethanol fuel blends. The SHED HC evaporative results were conflicting in that one ethanol blend increased HC emissions, one was lower and one was equal to the comparable base fuel.

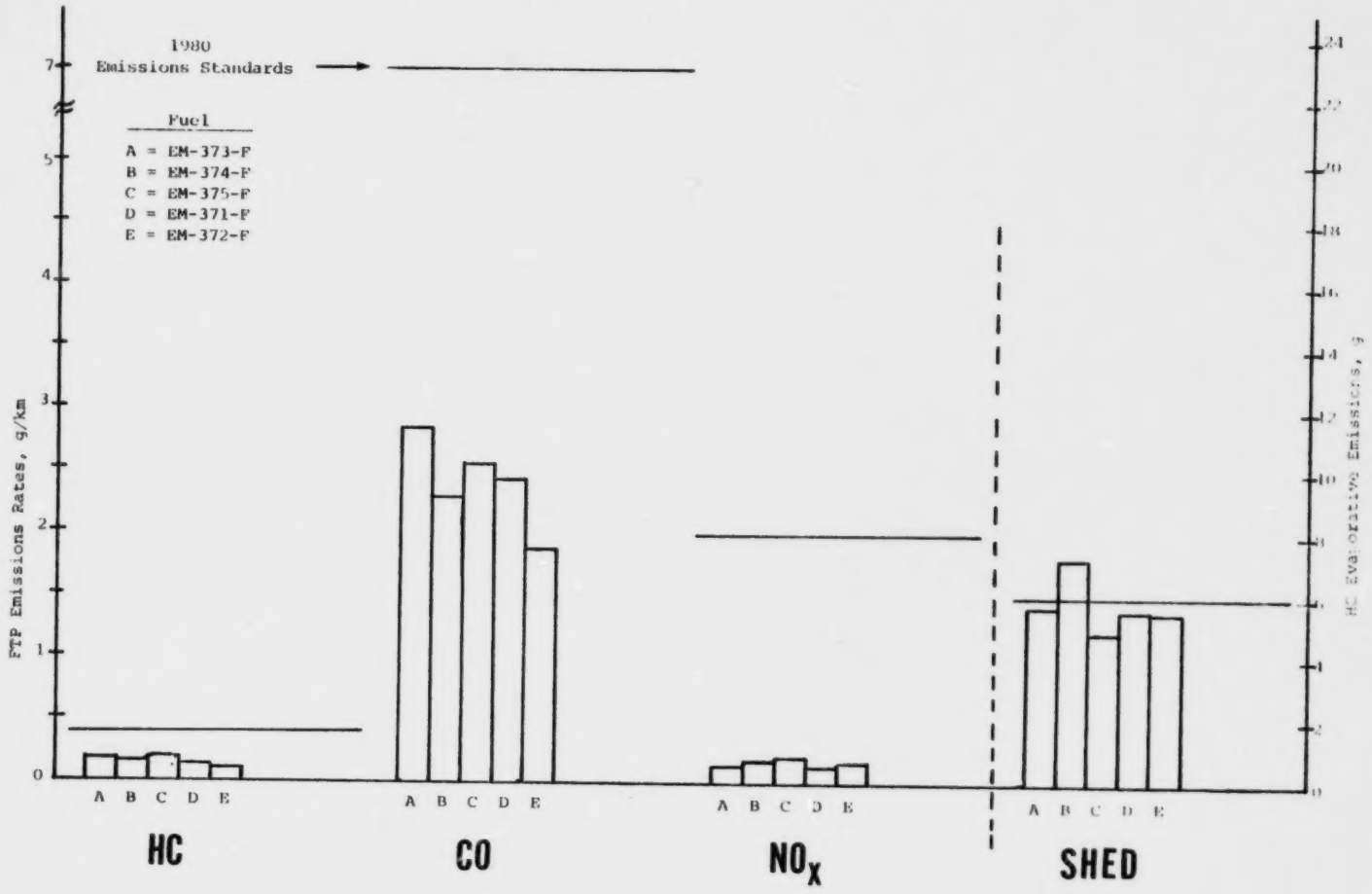

Figure 6. Saab FTP and Evaporative Emissions

2. Unregulated Emissions

Individual hydrocarbons (IHC), aldehyde and ethanol emissions were measured during each dynamometer run. The data for each fuel has been averaged and is listed in Table 7. The individual data points for each test are listed in Tables E-2 and E-3 of Appendix E. As discussed previously, and especially in this case, the aldehyde emissions are very low and are near the detection limits of this analytical method, and do not indicate any definitive trends. The IHC results showed that methane was 20 percent lower with Fuel E (EM-371-F) than the base Fuel F (EM-372-F). No changes in methane emission rates were observed with Fuels A, B, and C (EM-373-F, EM-374-F and EM-375-F). The remaining individual hydrocarbons were only slightly unaffected or showed no definite trends. No ethanol was observed in the exhaust.

The evaporative ethanol emissions are listed in Table 7. The repeatibility for each ethanol fuel mixture was good. Fuel C (EM-375-F) and Fuel E (EM-372-F) exhibited similar results on both portions of the evaporative test. Fuel B (EM-374-F) emitted approximately a third of the ethanol emissions as Fuels C (EM-375-F) and E (EM-372-F). Fuels C and E are similar to one another as far as evaporative emissions are concerned but dissimilar in the area of exhaust emissions. The fuel specifications support this in that both Fuels C and E have identical initial boiling points but a large variance in hydrocarbon composition.

D. Marquis

Regulated and several unregulated emissions results were obtained during the entire FTP using a base gasoline and gasoline mixtures of tertiary butyl alcohol (TBA) and methyl tertiary butyl ether (MTBE).

1. Regulated Emissions

The results of the individual run computer printouts are presented in Tables F-2 through F-10 of Appendix F. These results have been summarized and are presented in Table F-1. The average CO, HC and NO_x FTP emissions and SHED evaporative emissions are illustrated in Figure 7. The CO emissions were reduced 30-40 percent with both the TBA and MTBE fuel blends. There was no effect on the NO_x emissions with the fuel blends while only a slight decrease in HC emissions was observed. The TBA and MTBE had no effect on the HC evaporative emissions.

2. Unregulated Emissions

Individual hydrocarbons, aldehydes, and TBA emissions were also measured during the dynamometer run. Table 8 lists the average for the data. The individual data points for each run is listed in Appendix F, Table F-1. Again the aldehyde emissions are low and the data inclusive. The individual hydrocarbon results indicate trends previously seen on the other vehicles. Methane emissions were reduced approximately 20 percent with Fuel G and H while the remaining hydrocarbons remained fairly constant. The exhaust did not contain any measureable amounts of TBA.

TABLE 7. SAAB AVERAGE UNREGULATED EMISSIONS RESULTS

Average Aldehyde, mg/km

Fuel	Form.	Acet.	Acetone*	Isobuty.	Methylethyl Ketone	Croton.	Hexan.	Benzene	Total
EM-373-F	0.23	0.19	0.03	0	0.08	--	0.17	0.28	0.98
EM-374-F	0.17	0.18	0.14	0	0.06	--	0.08	0.08	0.60
EM-375-F	0.35	0.04	0.03	0	0.06	--	0.09	0	0.82
EM-371-F	0.19	0.19	0.09	0	0.16	--	0.22	0.41	1.25
EM-372-F	0.21	0.23	0.04	0	0.12	--	0.19	0.10	0.89

* Includes acrolein and propanol

Average Individual Hydrocarbon, mg/km

Fuel	Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toluene
EM-373-F	33.04	15.37	5.59	2.61	1.15	6.42	15.19	9.88
EM-374-F	30.34	14.20	4.60	2.68	0.78	5.81	11.89	9.34
EM-375-F	30.64	16.50	4.94	3.20	1.40	6.03	14.29	12.46
EM-371-F	20.41	9.46	3.18	1.90	0.31	6.60	7.55	12.21
EM-372-F	16.41	7.91	2.73	1.82	0.60	5.45	6.36	10.11

Fuel	Date	Component	Evaporative, g DBL	HSL	Total	FTP, g/km
EM-372-F	11-30-78	Ethanol	0.40	0.55	0.95	0
EM-372-F	12-1-78	Ethanol	0.53	0.68	1.21	0
EM-374-F	11-21-78	Ethanol	0.22	0.14	0.36	0
EM-375-F	11-15-78	Ethanol	0.32	0.68	1.00	0
EM-375-F	11-16-78	Ethanol	0.27	0.86	1.13	0

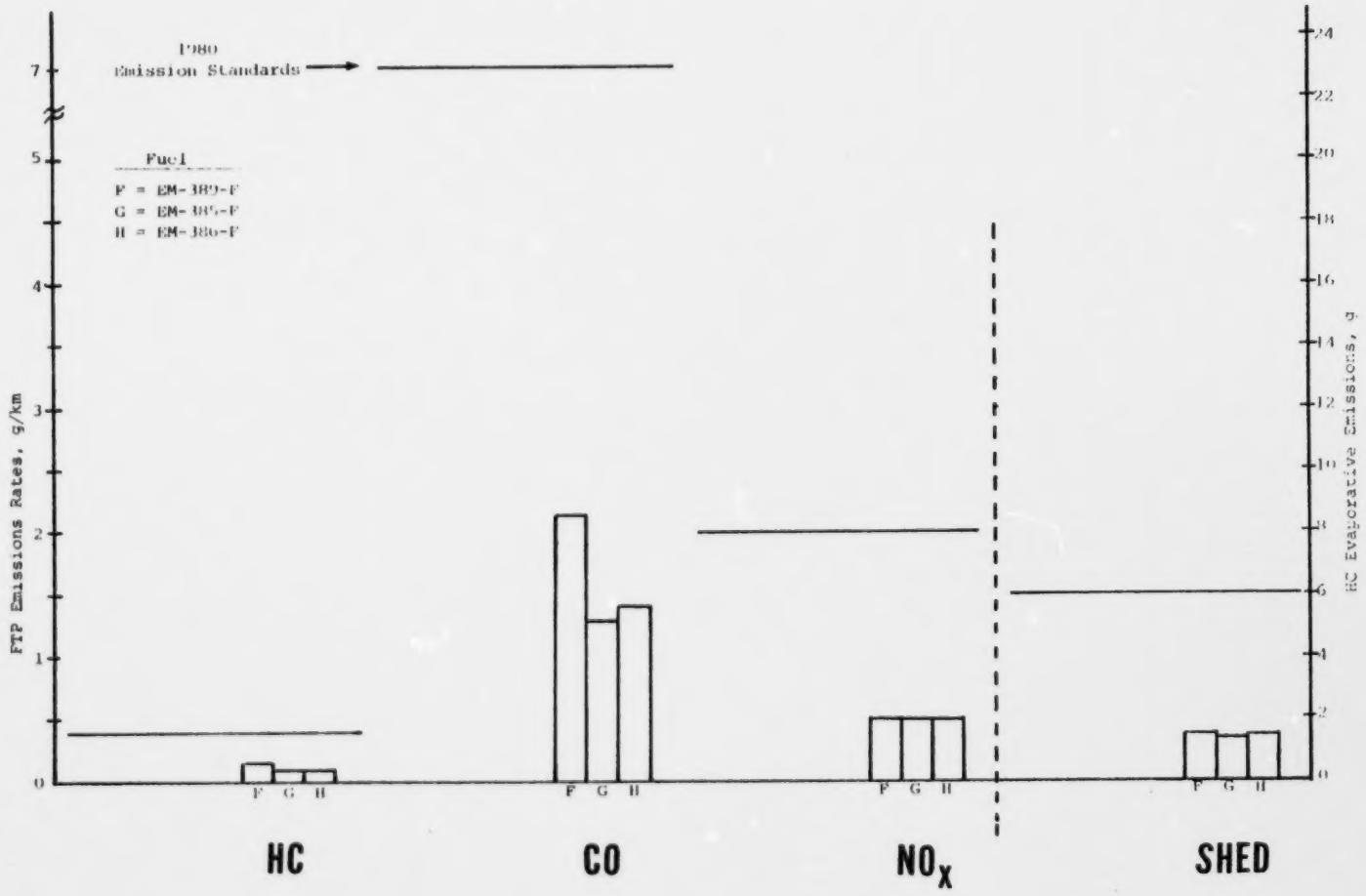

Figure 7. Marquis FTP and Evaporative Emissions

TABLE 8. MARQUIS AVERAGE UNREGULATED EMISSIONS RESULTS

Aldehyde, mg/km

Fuel	Form.	Acet.	Acetone*	Isobuty.	Methylethyl Ketone	Croton	Hexan.	Benzene	Total
EM-389-F	0.73	0.02	0.09	0.10	0.07	0.04	0	0.78	1.37
EM-385-F	1.03	0	0	0.03	0	0	0	0	1.06
EM-386-F	1.00	0	0	0	0	0.09	0	0.03	1.12

* Includes acrolein and propanol

Individual Hydrocarbon, mg/km

Fuel	Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toulene
EM-389-F	48.72	3.09	3.33	3.19	1.41	1.91	3.94	14.42
EM-385-F	41.45	2.36	3.64	1.65	0.94	1.18	2.21	9.54
EM-386-F	41.79	2.83	3.48	2.30	0.72	1.43	2.49	11.37

Fuel	Date	Compound	Evaporative, g DBL	HSL	Total	FTP, g/km
EM-385-F	5-14-79	TBA	0	0.047	0.047	0
EM-385-F	5-15-79	TBA	0	0.055	0.055	0

The evaporative TBA emissions are also listed in Table 8. The results indicate that all of TBA measured came from the hot soak portion of the test. This vehicle exhibited the lowest evaporative emissions, both TBA and HC, of all the vehicles evaluated in this study.

E. Discussion of Results

The results of this research effort indicated that fuel mixtures containing ethanol, tertiary butyl alcohol (TBA) and methyl tertiary butyl ether affect the regulated exhaust and evaporative emissions in the same general manner. Little or no effect on HC or NO_x emission rates was observed on a net mass level with any of the aformentioned fuel supplements. Carbon monoxide emission rates were significantly reduced with all fuel blends on all four test vehicles. This reduction is summarized as a bar graph in Figure 8. An earlier study[3] on non-catalyst vehicles indicated similar trends.

A comparison of the evaporative emission hydrocarbons for the various test fuels are summarized in Figure 9. Of the four test cars in the program, the fuel blends had the least effect on the Saab and Marquis, whereas the Mustang and Malibu had increased evaporative emissions with two of the three fuel blends. No increase was observed in the unregulated emissions measured in the exhaust. Significant amounts of fuel additives (i.e., ethanol, TBA or MTBE) in the evaporative emissions were observed on some tests.

In general, the test to test variability of evaporative emissions is considerably greater than for regulated emissions. This is due in part to the design and location of the specific HC evaporative emission control system.

The use of fuels studied in this report should not interfere with any of the vehicles studied meeting the Federal Emissions Standards for gaseous emissions generated on the dynamometer portion of the FTP. Depending on the evaporative system of the vehicle, the HC Evaporative Emission Standard may be difficult to meet in specific cases.

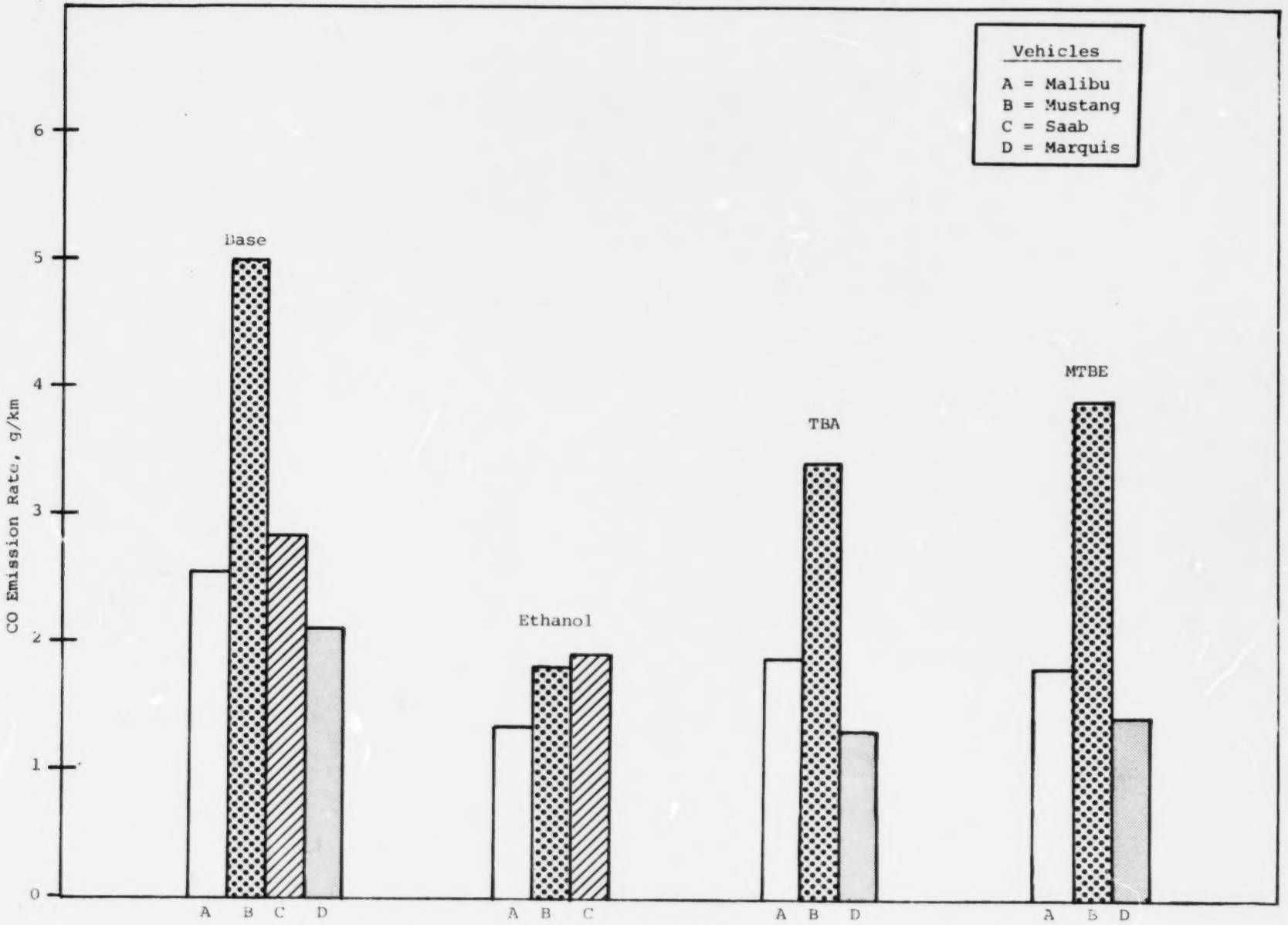

Figure 8. Carbon Monoxide Emission Rate Summary For All Types Of Test Fuels

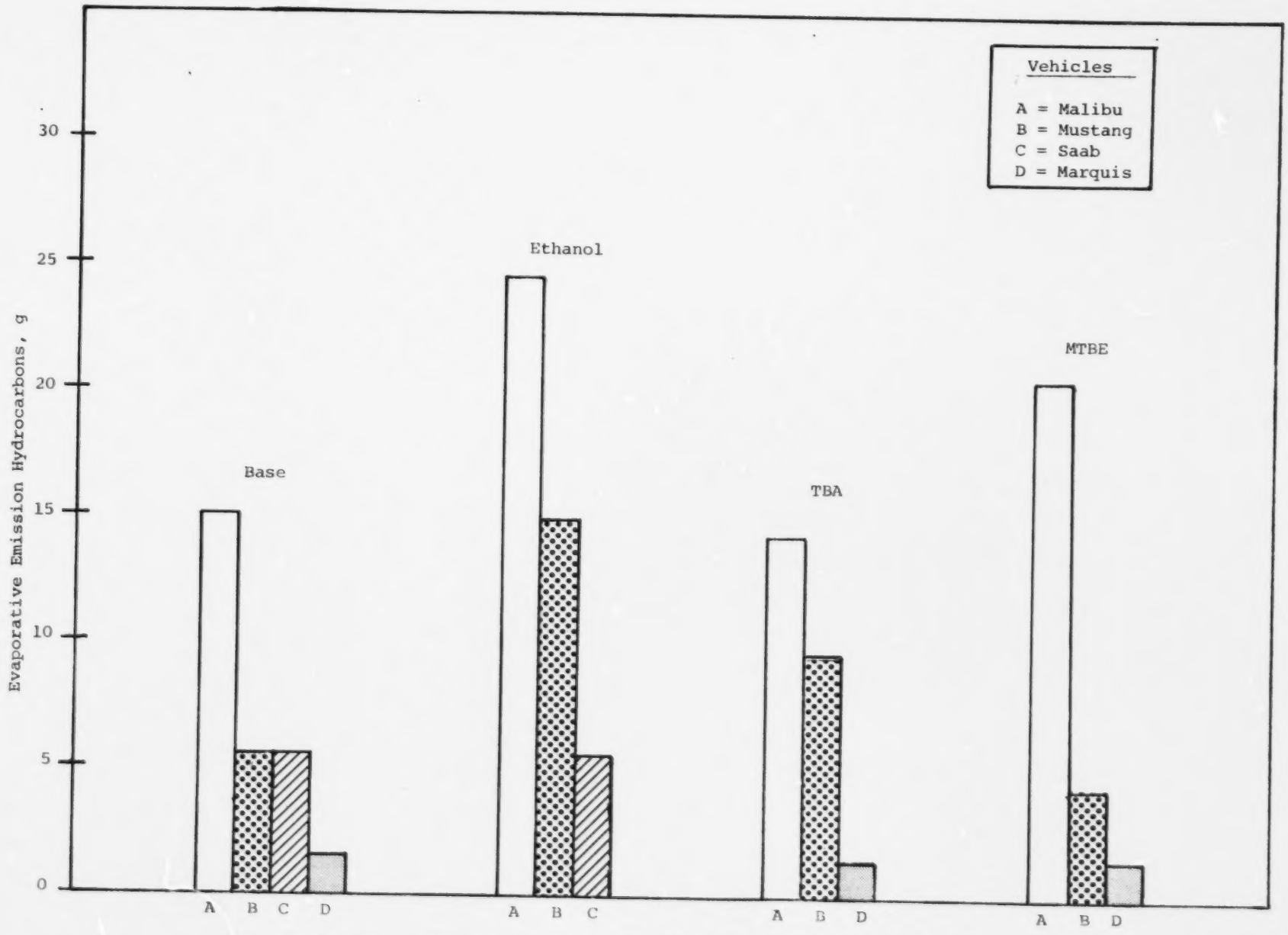

Figure 9. Hydrocarbon Evaporative Emission Summary For All Types Of Test Fuels

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1. Federal Register, Volume 42, No. 124, Part III, June 28, 1977.

2. Analytical Procedures for Characterizing Unregulated Pollutant Emissions from Motor Vehicles, Environmental Science Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, February 1979.

3. Brinkman, N.D., N.E. Gallopaulos, and M.W. Jackson, "Exhaust Emissions, Fuel Economy and Driveability of Vehicles Fueled with Alcohol-Gasoline Blends", Paper 750120, presented at SAE Engineering Congress, Detroit, Michigan, February 1975.

APPENDIX A

ANALYTICAL PROCEDURE FOR THE MEASUREMENT OF TERTIARY BUTYL ALCOHOL IN EXHAUST AND SHED EVAPORATIVE EMISSIONS

THE MEASUREMENT OF TERTIARY BUTYL ALCOHOL
IN EXHAUST AND IN EVAPORATIVE EMISSIONS

The measurement of TBA in exhaust and in evaporative emissions is accomplished by bubbling the samples through two glass impingers containing deionized water. TBA is highly soluble in water; therefore, it is efficiently trapped in the impingers. The exhaust sample is collected continuously during the driving cycle. The evaporative sample is collected in a Tedlar bag from the evaporative emission enclosure, then bubbled through the water. A portion of each of these solutions is injected into a gas chromatograph equipped with a flame ionization detector (FID). External standards of diluted 99.5% TBA are used to quantify the results. Detection limits of this procedure is on the order of 0.1 ppm.

LIST OF EQUIPMENT REAGENTS

The equipment and reagents for the analysis of the tertiary butyl alcohol are divided into two groups. The first involve the sample acquisition and the second the instrumental analysis of the sample once is has been obtained. Manufacturer, stock number and any pertinent descriptive information are listed.

Sampling

1. Glass impingers, ACE Glass Products, Catalog #7530-11, plain tapered tip stoppers with 18/7 arm joints and 29/42 bottle joints.

2. Flowmeter, Brooks Instrument Division, Model 1555, tube size R-2-15-C, graduated 0-15, sapphire float, 0-5 ℓ/min range.

3. Sample pump, Thomas Model 106 CA18, capable of free flow capacity of 4 ℓ/min.

4. Dry gas meter, American Singer Corporation, Type AL-120, 60 CFH capacity.

5. Regulating valve, Nupro 4MG, stainless steel.

6. Teflon tubing, United States Plastic Corporation, 1/4" OD x 1/8" ID and 5/16" OD x 1/8" ID.

7. Teflon solenoid valve, the Fluorocarbon Company, Model DV2-144NCAL.

8. Drying tube, Analabs Inc., Catalog #HGC-146, 6" long 1/4" brass fittings.

9. Miscellaneous Teflon nuts, ferrules, unions, tees, clamps, connectors, etc.

10. Digital readout for dry gas meter.

11. Miscellaneous electrical switches, lights, wirings, etc.

12. Six channel digital thermometer, Analog Devices, Model #3026/J/1.

13. Iron/Constantan type J single thermocouple with 1/4" OD stainless steel metal sheath, Thermo Sensors Corporation.

14. 30 mℓ polypropylene sample storage bottles, Nalgene Labware, Catalog #2006-0001.

15. Filtered deionized H_2O.

16 Tedlar bags.

Instrumental Analysis

1. 10 µℓ syringe, Hamilton Co., Reno, Nevada.

2. Varian Aerograph Series 1400 Gas Chromatograph equipped with a flame ionization detector (FID).

3. Soltec Model B-281 1 mv recorder.

4. Hewlett-Packard Model 3354 gas chromatograph computer system with remote teletype printout.

5. Perkin-Elmer Dial-A-Flow.

Preparation of Primary Standards

The primary standards for the TBA are prepared by diluting 99.5% TBA (certified by Aldrich Chemical Co., Inc.) to known concentrations with filtered deionized H_2O. Standards with concentrations ranging from 0.78 ppm to 7.8 ppm were used in this sample analysis.

Sampling System

Two sampling methods are used to collect TBA samples. The first method is the collection of samples from dilute exhaust emissions. The second method is the collection of samples during an evaporative emissions SHED test. The flow schematic is shown in Figure B-1 and B-2.

For the collection of exhaust emissions, a set of two glass impingers, each containing 25 mℓ of deionized H_2O, is used to trap samples for the analysis of the TBA. The two glass impingers effectively trap 95+% of the TBA. The temperature of diluted exhaust is monitored by a thermocouple immediately prior to the dry gas meter. The dry gas meter determined the total flow through the impingers during the driving cycle. The sample pump is capable of pulling a flow rate of 4 ℓ/min. A drier is included to prevent condensation in the pump, flowmeter, dry gas meter, etc. A flowmeter allows continuous monitoring of the sample flow.

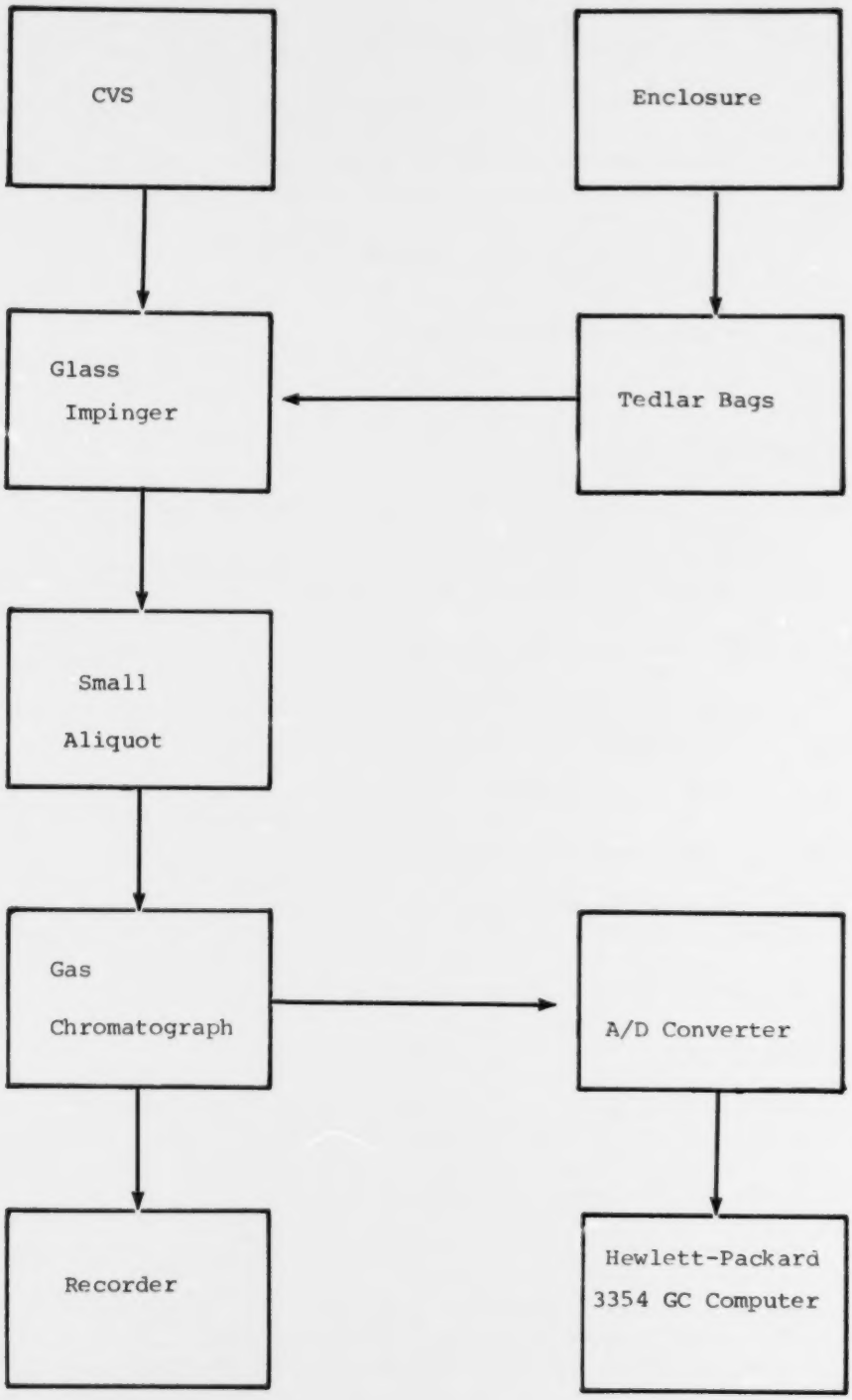

Figure B-1. TBA Analysis Flow Schematic

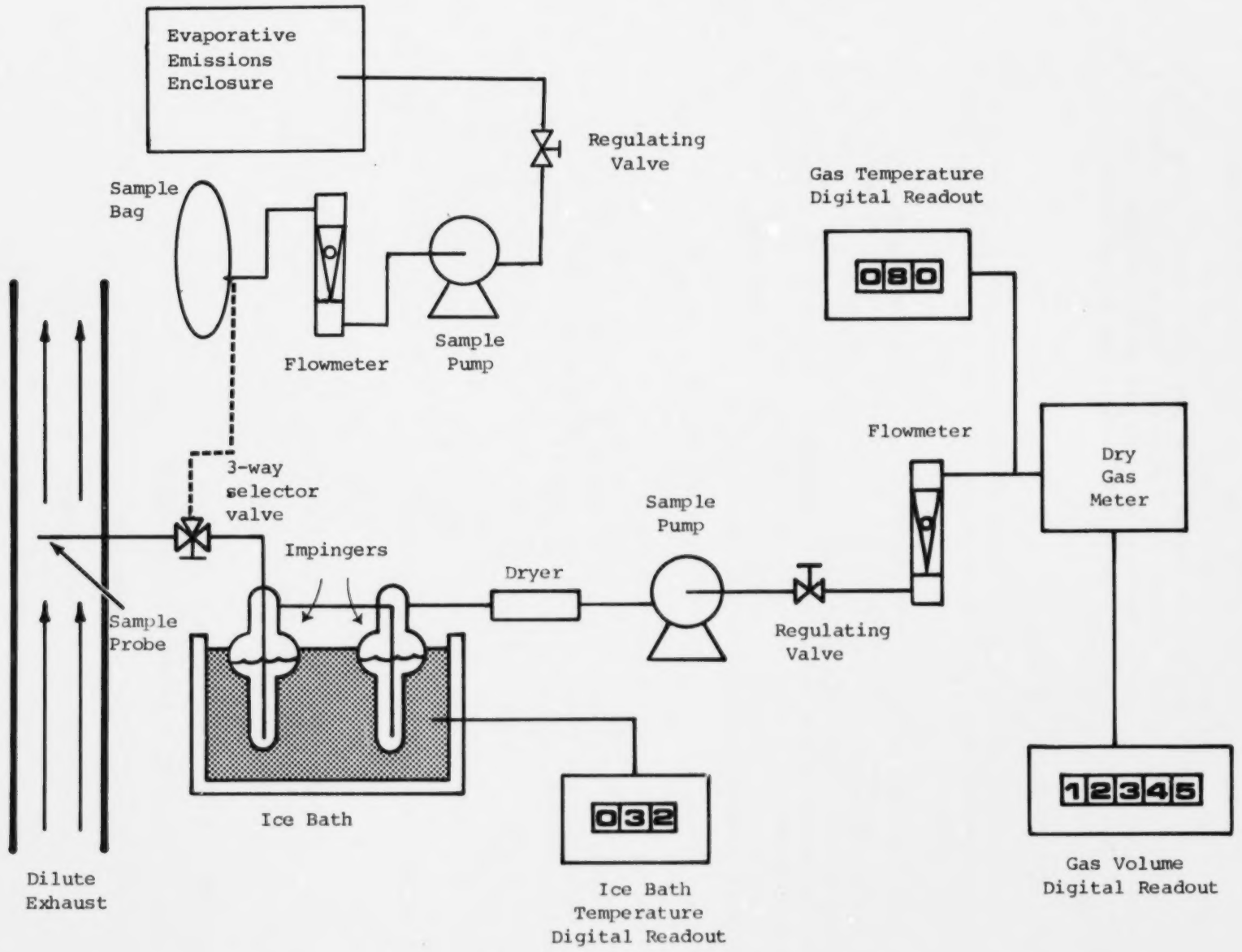

Figure B-2. Tertiary Butyl Alcohol Sample Collection Flow Schematic

For collection of the TBA samples during the evaporative emissions SHED test, four Tedlar bags are collected. One is collected at the beginning, and one at the end of each the diurnal breathing loss and the hot soak loss phases of the test. The sample is pumped from the SHED into the Tedlar bags at a rate of approximately 25 ℓ/min for 3 minutes. This flow rate is used to attain the maximum sample volume in the shortest period of time. The bags are then plumbed into the same system as described for the bubbling of the dilute exhaust samples.

Analytical Procedure

The analysis of the terirary butyl alcohol is accomplished by trapping the TBA in deionized H_2O and analyzing the sample with a gas chromatograph equipped with a FID.

For the analysis of the TBA, either dilute exhaust or evaporative emissions collected in Tedlar bags, are bubbled through a pair of glass impingers, each containing 25 mℓ of deionnzed H_2O. Due to the high solubility of TBA in H_2O, 95+% of compound is trapped in the two impingers. The temperature of the impingers is maintained a 0-5°C by an ice water bath, and the flow rate through the impinger is kept at 4 ℓ/min. At the completion of sampling, the impingers are removed and the contents are transferred to 30 mℓ polypropylene bottles until analysis.

A Varian Aerograph Series 1400 gas chromatograph equipped with a flame ionization detector (FID) is used to analyze the sample. A 5 µℓ portion of the sample is injected into the gas chormatograph (GC). The column is a 10" x 1/8" OD, 1/16" ID Teflon column, containing 60/80 mesh Chromosorb 102. This column was found effective because there is no deterioration due to H_2O injections and it gave an appropriate retention time for TBA. The carrier gas is helium, which flows through the column at a rate of 65 mℓ/min. A Perkin-Elmer Dial-A-Flow is used to give added control over the carrier gas flow rate. Optimum flows for the FID air and H_2 were found to be 300 mℓ/min and 40 mℓ/min. respectively. The column temperature is maintained at 170°C at all times during analysis. The ares of the TBA sample peaks, which are seen at a retention time of approximately 3 minutes are compared to the peak areas of standard solutions.

Calculation

This procedure has been developed to provide the user with the concentration of tertiary butyl alcohol in the exhaust and the evaporative emission enclosure. Calculation of the results are expressed in µg TBA/m^3.

DERIVATION OF EQUATION

Let Csam = concentration of sample, µg/mℓ

Cstd = concentration of standard, µg/mℓ

Asam - GC peak area of sample, relative units

Astd - GC peak area of standard, relative units

Since the gas chromatograph flame ionization detector (FID) has demonstrated a linear response, the following equation holds true:

$$\frac{Csam}{Asam} = \frac{Cstd}{Astd}$$

$$Csam = \frac{Cstd \times Asam}{Astd}$$

The Csam in the solution is corrected for any necessary dilution by multiplying by the dilution factor.

$$Csam = \frac{Cstd,\ \mu g/m\ell\ a\ Asam \times D.F.}{Astd}$$

To obtain the total TBA in the absorbing solution, the absorbing reagent volume (expressed in mℓ) is multiplied to get the equation:

$$\underset{(\mu g)}{Csam} = \frac{Cstd,\ \mu g/m\ell \times Asam \times D.F. \times Abs.\ vol,\ m^{\ell}}{Astd}$$

The next step is to convert the sample concentration to µg per volume expressed in cubic meters. The sample acquisition is effected using dry gas meters that have units expressed in cubic feet. To make this conversion, the following steps are observed.

$$\underset{(\mu g/ft^3)}{Csam} = \frac{Cstd,\ \mu g/m\ell \times Asam \times D.F. \times Abs.\ Vol.,\ m\ell}{Astd \times Sam.\ Vol.,\ ft^3}$$

$$\underset{(\mu g/ft^3)}{Csam} = \frac{Cstd,\ \mu g/m\ell \times Asam \times D.F. \times Abs.\ vol.,\ m\ell \times 35.31\ ft^3}{Astd \times Sam.\ Vol.,\ ft^3 \times 1\ m^3}$$

The sample volume was measured at the actual conditions of the test and is corrected to 20°C (68°F) and 760 mm Hg (29.92 HG)

$$\underset{(\mu g/m^3)}{Csam} = \frac{Cstd,\ \mu g/m\ \ell x\ Asam \times D.F. \times Abs.\ vol.,\ m\ell}{Astd \times sam.\ vol.,\ ft^3 \times 1\ m^3 \times B.P.,"Hg} \times \frac{35.31\ ft^3 \times 29.92"Hg \times sample\ temp\ °F + 460°F}{528°R}$$

At this point, the concentration of the sample is expressed in $\mu g/m^3$ at 20°C (68°F) and 760 mm (29.92° Hg).

This value is used to determine the amount of TBA in exhaust or in the evaporative emissions enclosure by multiplying the value by the total volume of either the enclosure or the CVS flow. The TBA value is then reported in either grams (for evaporative emissions) or divided by the number of kilometers the vehicle traveled to obtain milligrams per kilometer.

APPENDIX B

ANALYTICAL PROCEDURE FOR THE MEASUREMENT OF ETHYL ALCOHOL IN EXHAUST AND SHED EVAPORATIVE EMISSIONS

THE MEASUREMENT OF ETHYL ALCOHOL IN SHED EXHAUST AND EVAPORATIVE EMISSIONS

The measurement of ethyl alcohol in exhaust and evaporative emissions was accomplished by direct bag analysis using a gas chromatograph equipped with a flame ionization detector. A limited number of qualification and validation experiments were conducted to insure the accuracy and reliability of the procedure. Contacts were made with key individuals at EPA, Ann Arbor and Research Triangle Park to coordinate the approach to this analysis with other participants in the evaporative emissions program.

Analytical System

The analysis for ethyl alcohol in exhaust and evaporative emissions is conducted using a gas chromatograph equipped with a flame ionization detector. The system employs two pneumatically operated electrically controlled Seiscor valves, one in a gas sampling valve configuration and the other in the backflush configuration. Figure A-1 illustrates the flow schematic of the analytical system.

The system was deisgned for bag analysis and used normal CVS bag samples for the exhaust emissions. In the case of the SHED emissions, bag samples were collected during the first and last minute of the soak. These bags were then transported to the gas chromatograph for subsequent analysis.

The analytical column selected for this separation was a 10' x 1/8" SS with 15% TCEP on 60/80 Chromosorb P. The separation of ethyl alcohol from benzene and toluene was satisfactory and no known interferences were encountered. The gas chromatograph oven was maintained at 50°C and the system was backflushed after the toluene peak. The total analysis time was 45-60 minutes. A typical separation of ethyl alcohol and the two closest eluting compounds is presented in Figure A-2. The specific GC operating parameters for this separation is presented in Table A-1.

Control System

The control of the two Seiscor valves is accomplished by ATC timers and ASCO electric solenoid valves. The electrical schematic for the control of the Seiscor valves using these timers and electric solenoid valves is shown in Figure A-3. The flow schematic for the vacuum and pressure lines to the Seiscor valves are presented in Figure A-4.

Equipment

This analysis is performed using a gas chromatograph equipped with a flame ionization detector. The gas chromatograph, recorder and data acquisition system are major components in the detection system. A control console was fabricated to house the mechanical hardware items that are necessary for the proper operation of the ethyl alcohol analysis system. The major items that are included in each of these systems is listed as follows:

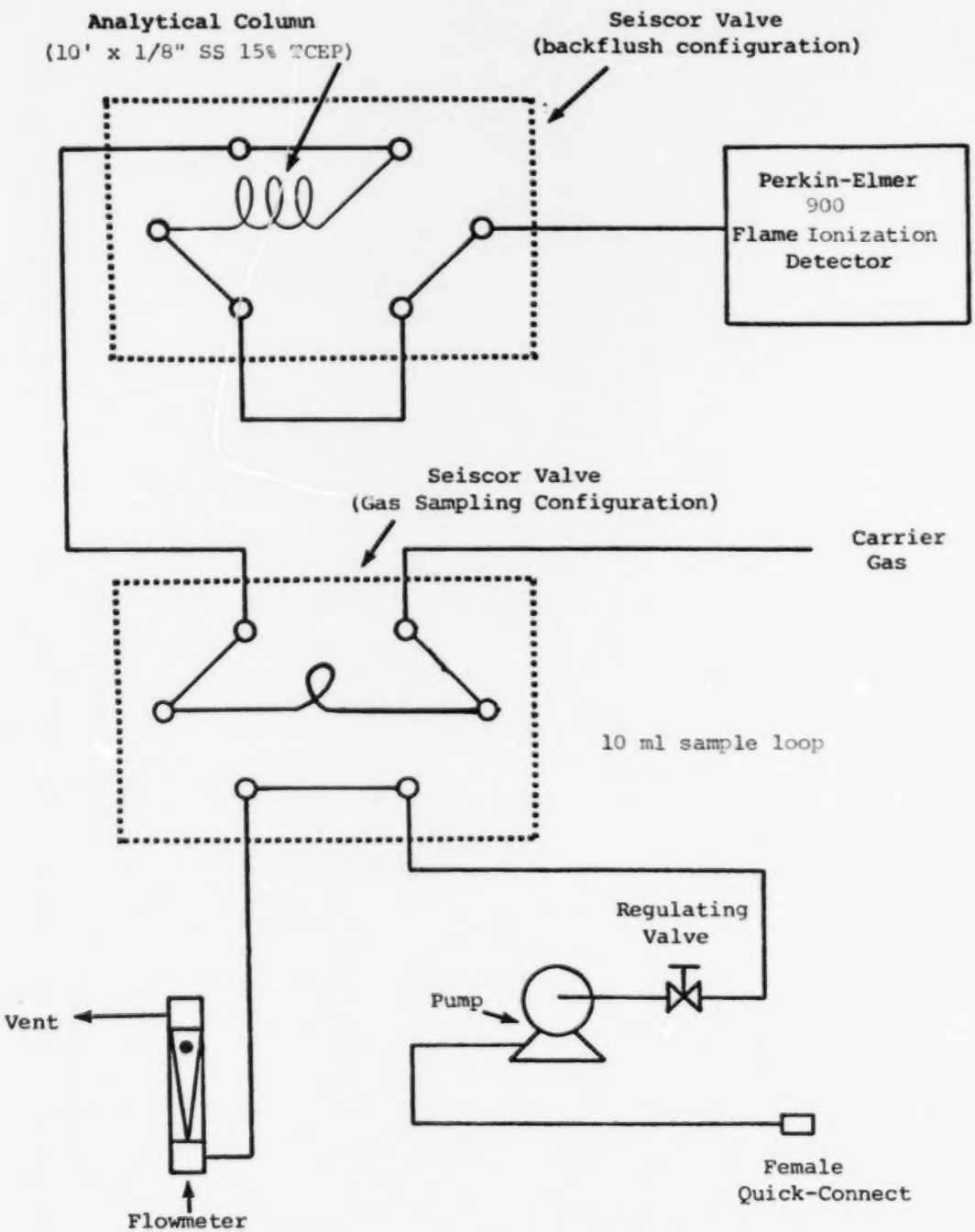

Figure A-1. Ethyl Alcohol Analytical Flow Schematic

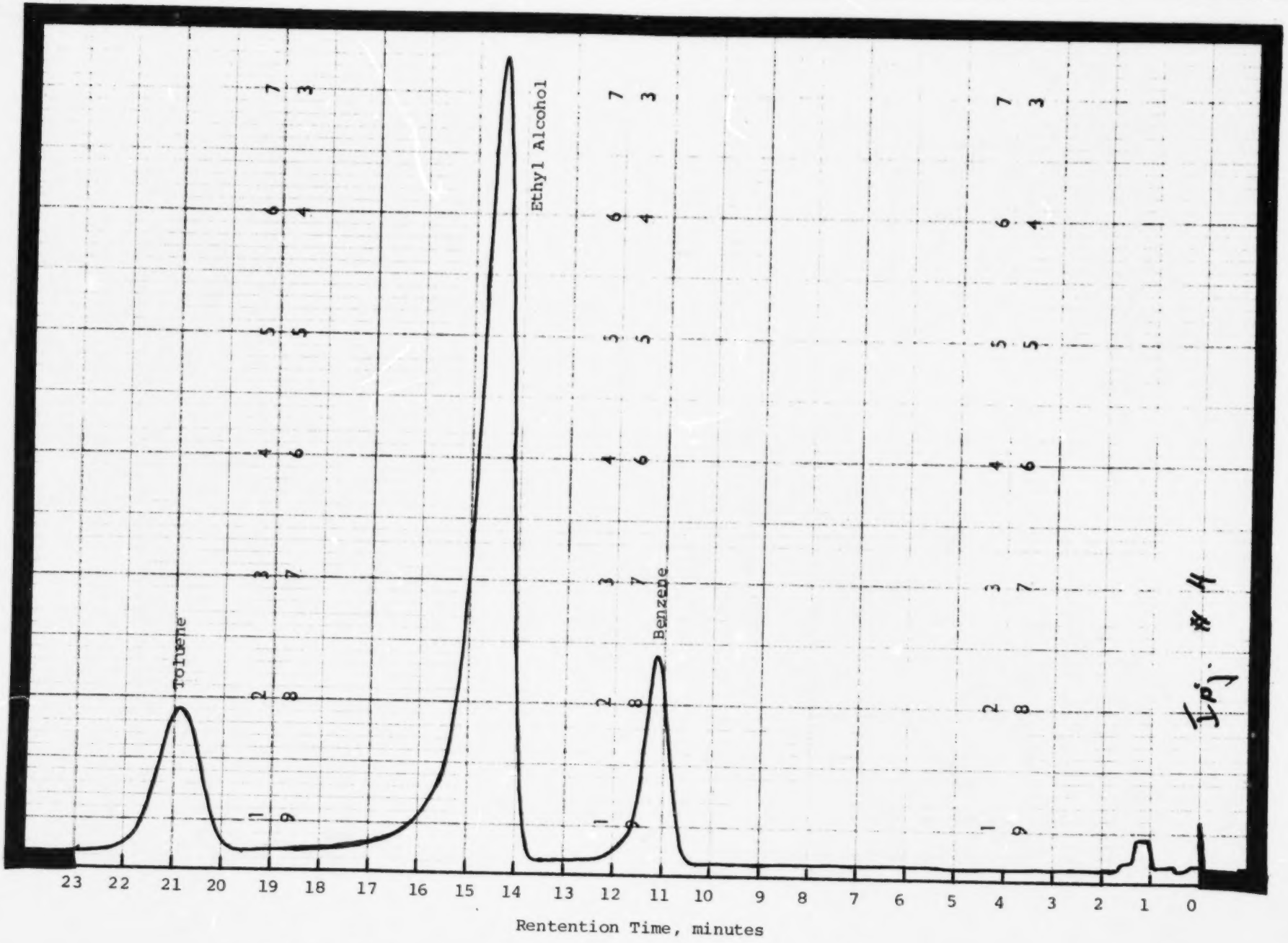

Figure A-2. Typical Separation of Ethyl Alcohol from Benzene and Toluene

TABLE A-1. ETHYL ALCOHOL ANALYSIS GAS CHROMATOGRAPH OPERATING PROCEDURES

Gas Chromatpgraph:	Perkin-Elmer Model 900
Detector Type:	Flame Ionization Detector
Gas Sampling Valve:	Seiscor Model VIII (GSV Configuration)
Backflush Valve	Seiscor Model VIII (BF Configuration)
Sample Loop Size:	10 ml
Column Temperature:	50°C
Detector Temperature:	50°C
Injection Temperature:	27°C
Carrier Gas:	Helium
Carrier Gas Flow:	30 ml/min
Hydrogen Gas Flow:	40 ml/min
Air Flow Rate:	400 ml/min
Column Dimensions:	10' x 1/8" SS
Column Material:	15% TCEP on 60/80 Chromosorb P-AW

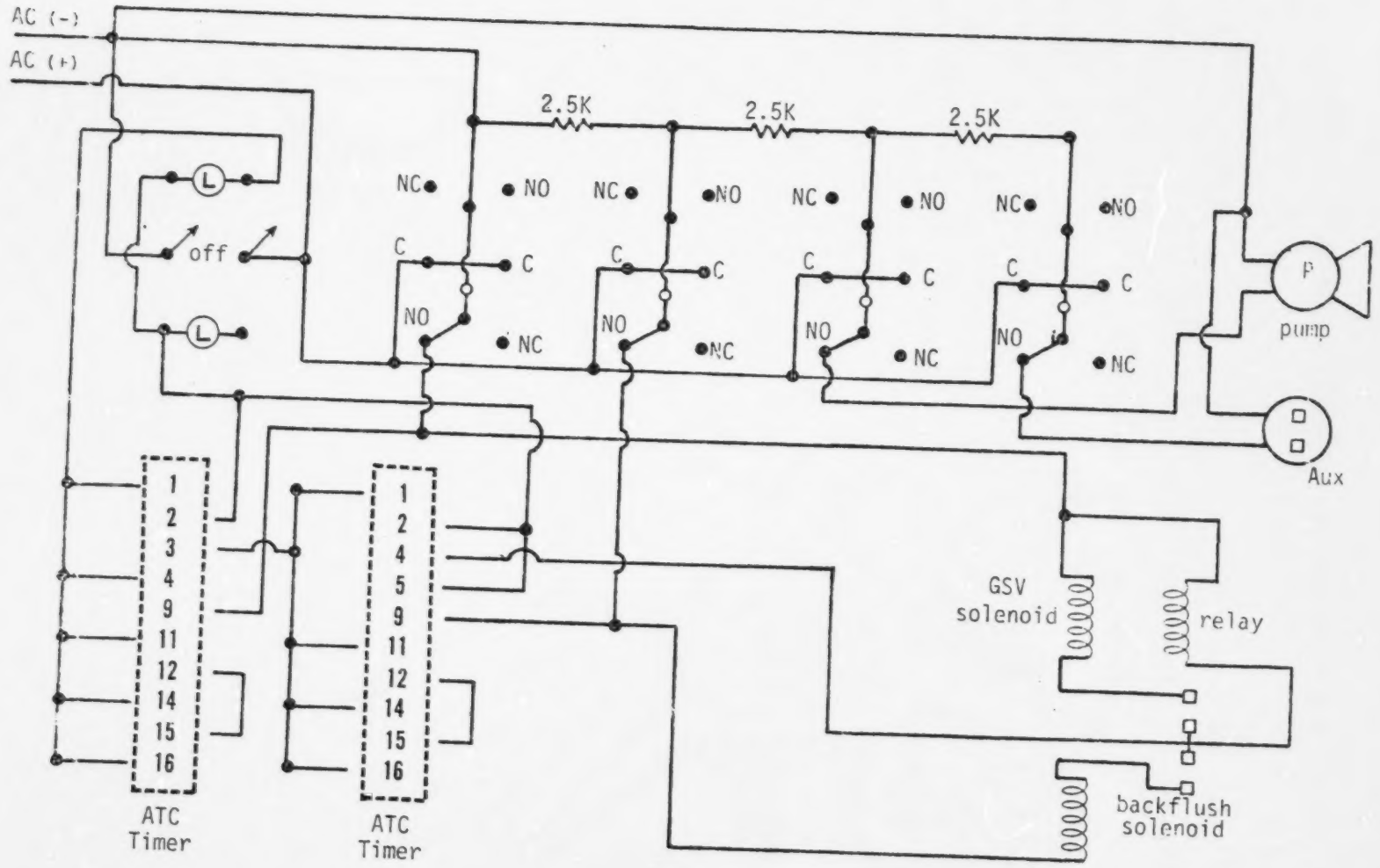

Figure A-3. Electrical Schematic for Nitrous Oxide Analysis System

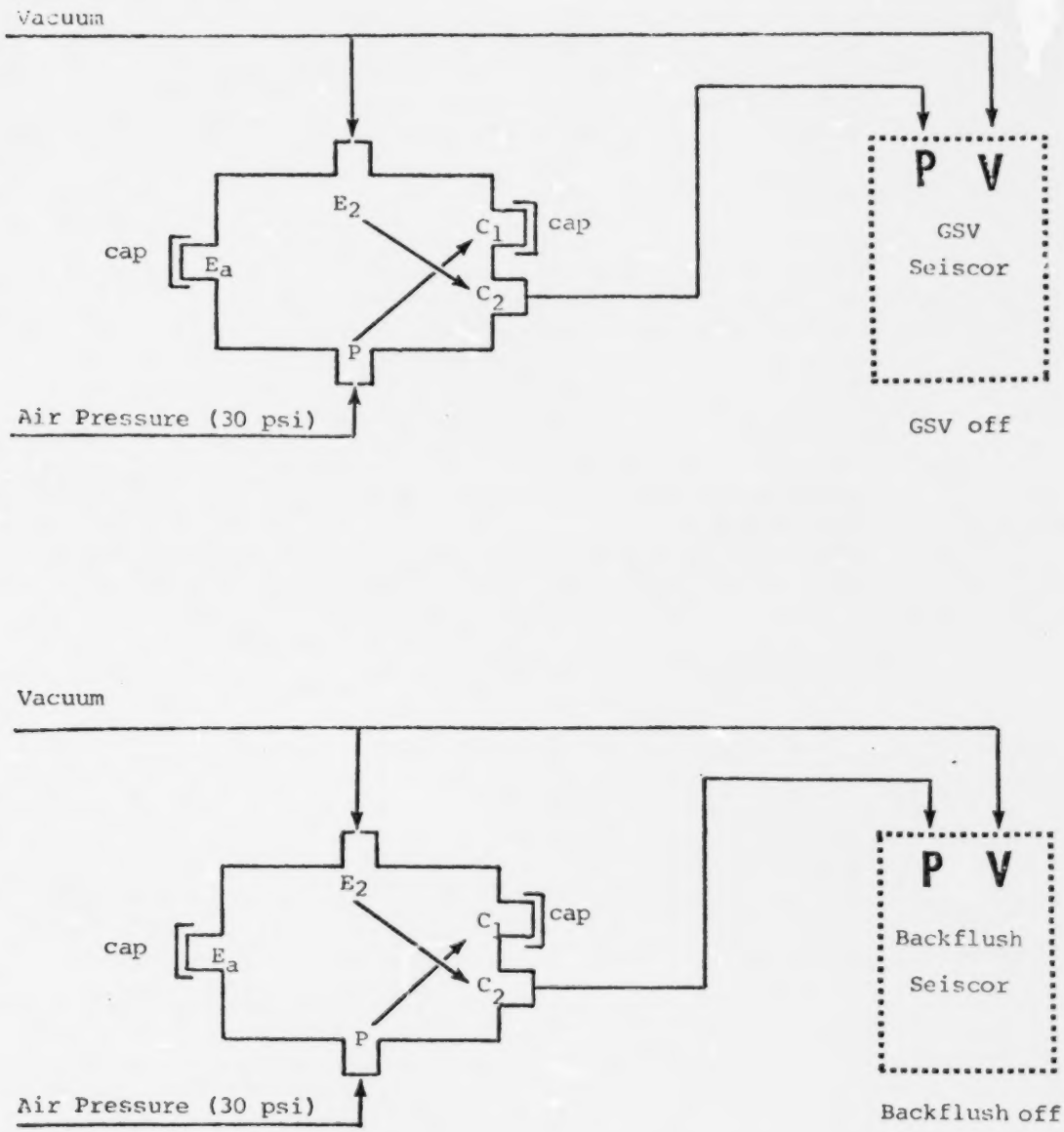

Figure A-4. Flow Schematic in Electric Solenoid Valves
(Both valves de-energized)

Gas Chromatograph

1. Perkin-Elmer Model 900 chromatograph
2. Soltec Model B-281 recorder
3. Hewlett-Packard Model 3354C GC computer system
4. Hewlett-Packard Model 1865A A/D Converter
5. Analytical column, 10' x 1/8" SS, 15% TCEP on 60/80 Chromosorb P-AW

Control Console System

1. Seiscor valve - gas sampling configuration
2. Seiscor valve - backflush configuration
3. ATC timers, Model 3254A346A10PX (2 ea)
4. ACSO solenoid valve, Model 834501 (2 ea)
5. Brook flowmeter, R-2-15-A w/SS float, 0-150 scale
6. Metal Bellows MB-155 pump
7. Female quick-connect, stainless steel
8. Nupro Model 2M stainless steel regulating valve
9. Stainless steel tubing (0.01"ID) for capillary restrictor
10. Miscellaneous stainless steel, copper and Telflon tubing (1/8" and 1/16")
11. Miscellaneous stainless steel and brass unions, tees, etc.
12. Bud Classic II control console cabinet, 14" x 19" panel
13. Miscellaneous electrical on-off switches

SHED Bag Sample Acquisition System

1. Sample pump, Thomas Model 917 CA TFE
2. Brooks flowmeter, Model 1555, R-6-15-A, sapphire float, 0-11 lpm
3. Regulating valve, Mupro 4MG, SS
4. Telfon tubing, 1/4" OD x 1/8" ID
5. SS quick connects, male and female
6. Tedlar bag ≈ one cubic foot capacity
7. Miscellaneous nuts, females and assorted unions, tees, etc.

Sample Calculations

It was initially planned to use ethyl alcohol blends in normal calibration cylinders. During the validation of the calibration technique, it became apparent that high pressure ethyl alcohol blends were not stable and other calibration techniques were investigated. Benzene was selected to be used as the external standard and the relative response to ethyl alcohol was established. Experiments determined that 1 ppm C (benzene) was equivalent to 0.05 mg ethanol per cubic foot. Using this relationship, the following equations were used to determine grams of ethanol per test.

1. General Calculation Equation

$$\text{ppm C Ethanol} = \frac{\text{GC area of Ethanol x ppm C Standard (Benzene)}}{\text{GV area standard (benzene)}}$$

2. Ethanol Evaporative Losses

Ethanol g/test - ppm C (0.050 mg/ppm C ft^3) (SHED vol. ft^3) (1 g/10^3mg)

If a test used a 68.3 ppm C benzene standard that gave area counts and the SHED volume was 1708 ft^3, then the following rate would be calculated.

$$\text{ppm C Ethanol} = \frac{(3560 \text{ area counts, } C_2H_5OH)\ (68.3 \text{ ppm C } C_6H_6)}{(17521 \text{ area counts, } C_6H_6}$$

ppm C Ethanol = 13.88 ppm C

Ethanol, g/test = ppm C C_2H_5OH x Response factor x SHED vol.

Ethanol, g/test = 13.88 ppm C x 0.050mg/ppm C ft^3 x 1708 ft^3 x 1g/1000mg

Ethanol, g/test = 1.19 g

APPENDIX C

MALIBU FTP RESULTS FOR REGULATED AND UNREGULATED EMISSIONS WITH SEVEN TEST FUELS

TABLE C-1. SUMMARY OF REGULATED EMISSIONS FROM 1978 MALIBU

Test No.	Fuel	Date	FTP Emissions Rates, g/km			HC Evaporative Emissions, g			Consumption ℓ/100 km
			HC	CO	NO_x	DBL	HSL	Total	
1-1	EM-373-F	11-10-78	0.22	2.26	0.43	21.26	2.58	23.84	18.17
1-2	EM-373-F	11-11-78	0.24	2.43	0.45	19.01	0.86	19.87	17.86
1-3	EM-373-F	11-16-78	0.20	2.70	0.49	8.42	0.90	9.32	16.84
1-4	EM-373-F	11-17-78	0.21	2.35	0.54	20.38	0.82	21.20	17.06
1-5	EM-373-F	11-21-78	0.22	2.52	0.49	15.89	11.45	27.34	17.03
	Average		0.22	2.45	0.48	16.99	3.32	20.31	17.39
2-1	EM-374-F	11-12-78	0.25	1.59	0.42	14.82	4.29	19.11	17.37
2-2	EM-374-F	11-13-78	0.24	1.55	0.42	17.51	1.87	19.38	17.27
	Average		0.25	1.57	0.42	16.17	3.08	19.25	17.32
3-1	EM-375-F	11-15-78	0.25	1.65	0.55	20.33	1.32	21.65	17.33
3-2	EM-375-F	11-20-78	0.25	1.85	0.45	19.90	1.71	21.61	17.36
	Average		0.25	1.75	0.50	20.12	1.52	21.63	17.35
4-1	EM-371-F	11-27-78	0.22	2.57	0.43	13.78	0.92	14.70	17.09
4-2	EM-371-F	11-28-78	0.20	1.67	0.48	2.30	0.62	2.92	17.14
4-3	EM-371-F	12-04-78	0.20	1.66	0.47	15.07	1.12	16.19	16.62
4-4	EM-371-F	12-05-78	0.19	1.66	0.44	7.90	8.08	15.98	16.74
	Average		0.20	1.89	0.46	9.76	2.69	12.45	16.90
5-1	EM-372-F	11-29-78	0.25	1.28	0.44	12.77	9.95	22.72	16.85
5-2	EM-372-F	11-30-78	0.22	1.37	0.44	16.07	16.89	32.96	17.07
5-3	EM-372-F	12-01-78	0.27	1.41	0.44	9.59	1.84	11.43	16.78
	Average		0.25	1.35	0.44	12.81	9.56	22.37	16.90
6-1	EM-389-F	5-08-79	0.23	4.06	0.39	12.26	1.24	13.50	18.48
6-2	EM-389-F	5-09-79	0.24	4.22	0.39	9.68	2.17	11.86	18.37
6-3	EM-389-F	5-10-79	0.21	4.04	0.34	4.02	2.21	6.23	18.51
6-4	EM-389-F	5-22-79	0.24	2.90	0.40	19.02	1.99	22.23	17.73
6-5	EM-389-F	5-23-79	0.24	2.37	0.42	5.43	11.62	17.05	17.87
6-6	EM-389-F	5-24-79	0.24	2.39	0.44	17.84	1.97	19.81	17.85
	Average		0.23	3.33	0.40	11.38	3.53	15.11	18.14
7-1	EM-385-F	5-14-79	0.25	2.13	0.41	18.34	2.24	20.58	17.55
7-2	EM-385-F	5-15-79	0.23	1.72	0.41	4.24	2.42	6.66	17.29
7-3	EM-385-F	5-25-79	0.24	1.50	0.42	13.88	1.75	15.63	17.73
	Average		0.24	1.78	0.41	12.15	2.14	14.29	17.51
8-1	EM-386-F	5-16-79	0.24	1.60	0.45	18.66	1.86	20.52	17.83
8-2	EM-386-F	5-17-79	0.25	2.02	0.42	18.27	2.04	20.31	17.73
	Average		0.25	1.81	0.44	18.47	1.95	20.42	17.78

TABLE C-2. INDIVIDUAL HYDROCARBON EMISSIONS FROM 1978 MALIBU

Test No.	Fuel	Date	FTP Individual Hydrocarbon Emissions Rates, mg/km							
			Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toluene
1-1	EM-373-F	11-10-78	50.47	18.31	9.67	1.75	7.96	4.37	6.80	7.39
1-2	EM-373-F	11-11-78	51.22	23.05	10.07	2.80	0.84	0.29	9.11	12.21
1-3	EM-373-F	11-16-78	43.25	19.45	10.32	2.49	4.78	4.35	6.09	5.53
1-4	EM-373-F	11-17-78	42.88	19.14	9.94	2.55	3.04	4.35	5.84	5.22
1-5	EM-373-F	11-21-78	-----	-----	-----	----	----	----	----	----
	Average		46.96	19.99	10.00	2.40	4.16	3.34	6.96	7.59
2-1	EM-374-F	11-12-78	44.30	22.00	10.48	2.37	1.28	4.23	5.59	9.42
2-2	EM-374-F	11-13-78	46.77	21.31	10.23	3.09	1.53	4.02	6.53	7.21
	Average		45.54	21.66	10.36	2.73	1.41	4.13	6.06	8.32
3-1	EM-375-F	11-15-78	46.61	21.19	10.19	3.80	2.98	3.72	8.89	9.51
3-2	EM-375-F	11-20-78	41.39	20.63	10.19	3.48	0.37	3.85	6.21	7.46
	Average		44.00	20.91	10.19	3.64	1.68	3.79	7.55	8.49
4-1	EM-371-F	11-27-78	48.34	11.37	10.25	2.67	2.17	4.23	3.98	10.44
4-2	EM-371-F	11-28-78	-----	-----	-----	----	----	----	----	----
4-3	EM-371-F	12-04-78	40.58	10.44	9.32	0	0.31	4.10	2.49	7.52
4-4	EM-371-F	12-05-78	41.01	9.51	9.63	0.81	2.92	3.91	2.36	6.34
	Average		43.31	10.44	9.73	1.16	1.80	4.08	2.94	8.10
5-1	EM-372-F	11-29-78	40.45	11.00	10.07	2.42	2.61	3.23	2.11	6.90
5-2	EM-372-F	11-30-78	39.71	9.26	9.82	2.05	0.68	2.55	2.11	5.90
5-3	EM-372-F	12-01-78	34.98	11.81	10.25	3.85	2.86	4.04	2.49	11.12
	Average		38.38	10.69	10.05	2.77	2.05	3.27	2.24	7.97
6-1	EM-389-F	5-08-79	64.75	12.93	9.32	1.68	1.43	5.22	7.08	23.92
6-2	EM-389-F	5-09-79	62.26	13.67	8.39	2.17	1.62	5.03	6.09	38.40
6-3	EM-389-F	5-10-79	60.90	11.99	8.64	1.74	3.85	5.22	5.41	24.67
6-4	EM-389-F	5-22-79	52.76	12.06	8.76	2.11	1.68	4.91	4.04	22.99
6-5	EM-389-F	5-23-78	----	----	----	----	----	----	----	-----
6-6	EM-389-F	5-24-79	49.21	12.18	9.38	2.24	1.24	4.72	3.85	23.80
	Average		57.98	12.57	8.90	1.99	1.96	5.02	5.29	26.76
7-1	EM-385-F	5-14-79	45.86	11.56	9.88	1.37	2.73	4.35	3.67	24.36
7-2	EM-385-F	5-15-79	45.86	10.56	9.38	1.49	1.93	4.16	5.41	19.95
7-3	EM-385-F	5-25-79	44.00	10.56	9.76	1.62	1.68	4.00	3.04	17.83
	Average		45.24	10.89	9.67	1.49	2.11	4.17	4.04	20.71
8-1	EM-386-F	5-16-79	44.62	10.94	9.51	1.68	2.24	3.91	3.67	18.58
8-2	EM-386-F	5-17-79	45.74	11.31	9.92	1.80	2.05	4.78	3.23	21.38
	Average		45.18	11.13	9.72	1.74	2.15	4.35	3.45	19.98

TABLE C-3. ALDEHYDE EMISSIONS FROM 1978 MALIBU

Test No.	Fuel	Date	FTP Aldehydes Emissions Rates, mg/km								
			Form-	Acet-	Acetone*	Isobutry-	Methylethyl Ketone	Croton-	Hexan-	Benzene	Total
1-1	EM-373-F	11-10-78	1.80	0.93	0.31	0	0.12	----	0.19	0.31	3.66
1-2	EM-373-F	11-11-78	1.24	0.31	0	0	0.12	----	0.19	0	1.86
1-3	EM-373-F	11-16-78	0.87	0.06	0	0	0	----	0	0	0.93
1-4	EM-373-F	11-17-78	2.11	0.06	0.06	0	0	----	0.06	0	2.29
1-5	EM-373-F	11-21-78	----	----	----	-	----	----	----	----	----
	Average		1.51	0.34	0.09	0	0.06	----	0.11	0.08	2.19
2-1	EM-374-F	11-12-78	1.12	0.99	0.37	0	0	----	0	0	2.48
2-2	EM-374-F	11-13-78	0.25	0	0.19	0	0.06	----	0	0	0.50
	Average		0.69	0.50	0.28	0	0.03	----	0	0	1.49
3-1	EM-375-F	11-15-78	2.05	0.56	0	0	0.06	----	0.06	0	2.73
3-2	EM-375-F	11-20-78	1.37	0.62	0.06	0	0.06	----	0.06	0	2.17
	Average		1.71	0.59	0.03	0	0.06	----	0.06	0	2.45
4-1	EM-371-F	11-27-78	----	----	----	-	----	----	----	----	----
4-2	EM-371-F	11-28-78	----	----	----	-	----	----	----	----	----
4-3	EM-371-F	12-04-78	0.62	0	0.06	0	0.12	----	0.19	0	0.99
4-4	EM-371-F	12-05-78	1.24	0.12	0.06	0	0.12	----	0.12	0	1.66
	Average		0.93	0.06	0.06	0	0.12	----	0.16	0	1.33
5-1	EM-372-F	11-29-78	1.37	0.56	0	0	0.06	----	0.12	0	2.11
5-2	EM-372-F	11-30-78	1.80	1.06	0.19	0	0.12	----	0.19	0	3.36
5-3	EM-372-F	12-01-78	1.99	0	0.06	0	0.12	----	0.19	0.93	3.29
	Average		1.72	0.54	0.08	0	0.10	----	0.17	0.31	2.92
6-1	EM-389-F	5-08-79	0	0	0	0	0	0	0	0	0
6-2	EM-389-F	5-09-79	2.11	0	0	0	0	0	0	----	2.11
6-3	EM-389-F	5-10-79	0.44	0	0	0	0	0	0	0	0.44
6-4	EM-389-F	5-22-79	0.19	0	0	0	0	0.06	0	0	0.25
6-5	EM-389-F	5-23-79	0.06	0	0	0	0	0	0	2.17	2.23
6-6	EM-389-F	5-24-79	----	----	----	-	----	----	----	----	----
	Average		0.56	0	0	0	0	0.01	0	0.43	1.01
7-1	EM-385-F	5-14-79	1.68	0.62	0.25	0	0	0.06	0	0.44	3.05
7-2	EM-385-F	5-15-79	1.49	0.12	0.12	0	0	0.06	0	0.37	2.16
7-3	EM-385-F	5-25-79	----	----	----	-	----	----	----	----	----
	Average		1.59	0.37	0.19	0	0	0.06	0	0.41	2.61
8-1	EM-386-F	5-16-79	1.68	0.12	0.06	0	0	0	0	0.56	2.42
8-2	EM-386-F	5-17-79	0	0	0.19	0	0	0.12	0	1.06	1.37
	Average		0.84	0.06	0.13	0	0	0.06	0	0.81	1.90

TABLE C-4. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV. MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/10/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-373-F
ODOMETER 5799

BAROMETER 739.39 MM HG(29.11 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 58 PCT
ABSOLUTE HUMIDITY 10.7 GM/KG(74.8 GRAINS/LB) NOX HUMIDITY C.F. .9992

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1577.3 (62.1)	1577.3 (62.1)	1577.3 (62.1)
BLOWER INLET P MM. H2O(IN. H2O)	1422.4 (56.0)	1422.4 (56.0)	1422.4 (56.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	40.6 (105.0)	40.6 (105.0)	40.6 (105.0)
BLOWER REVOLUTIONS	10368	17811	10363
CVS FLOW STD. CU. METRES(SCF)	61.7 (2178.8)	106.0 (3742.7)	61.7 (2177.5)
HC SAMPLE METER/RANGE/PPM	10.8/ 3/ 108	22.0/ 2/ 22	32.0/ 2/ 32
HC BCKGRD METER/RANGE/PPM	1.0/ 3/ 10	11.7/ 2/ 12	10.6/ 2/ 11
CO SAMPLE METER/RANGE/PPM	30.8/ 3/ 721	23.6/13/ 22	92.1/13/ 93
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.2/13/ 1	1.5/13/ 1
CO2 SAMPLE METER/RANGE/PCT	49.4/ 2/ 2.25	78.8/ 3/ 1.44	43.7/ 2/ 1.93
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	3.1/ 3/ .05	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	26.0/ 2/ 26	13.0/ 2/ 13	19.9/ 2/ 20
NOX BCKGRD METER/RANGE/PPM	.6/ 2/ 1	.6/ 2/ 1	.5/ 2/ 1
DILUTION FACTOR	5.76	9.25	6.88
HC CONCENTRATION PPM	100	12	23
CO CONCENTRATION PPM	674	20	87
CO2 CONCENTRATION PCT	2.21	1.40	1.89
NOX CONCENTRATION PPM	25.5	12.5	19.5
HC MASS GRAMS	3.55	.71	.82
CO MASS GRAMS	48.45	2.51	6.23
CO2 MASS GRAMS	2492.9	2721.7	2139.3
NOX MASS GRAMS	3.01	2.52	2.29
HC GRAMS/KM (GRAMS/MILE)	.62 (.99)	.11 (.18)	.14 (.23)
CO GRAMS/KM (GRAMS/MILE)	8.43 (13.56)	.41 (.66)	1.09 (1.75)
CO2 GRAMS/KM (GRAMS/MILE)	433.6 (697.6)	442.2 (711.6)	373.1 (600.2)
NOX GRAMS/KM (GRAMS/MILE)	.52 (.84)	.41 (.66)	.40 (.64)
FUEL CONSUMPTION BY CB L/100KM(MPG)	19.15 (12.28)	18.92 (12.43)	16.01 (14.69)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.15 (3.82)	5.73 (3.56)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.23 (.36)
CO GRAMS/KM (GRAMS/MILE)	2.24 (3.64)
CO2 GRAMS/KM (GRAMS/MILE)	421.42 (678.06)
NOX GRAMS/KM (GRAMS/MILE)	.43 (.69)
FUEL CONSUMPTION BY CB L/100KM (MPG)	18.17 (12.95)

TABLE C-5. VEHICLE EMISSION RESULTS

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/11/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-373-F
ODOMETER 5817

BAROMETER 744.47 MM HG(29.31 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 65 PCT
ABSOLUTE HUMIDITY 11.6 GM/KG(80.9 GRAINS/LB)

NOX HUMIDITY C.F. 1.0283

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1422.4 (56.0)	1422.4 (56.0)	1422.4 (56.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.2 (108.0)	42.2 (108.0)	42.2 (108.0)
BLOWER REVOLUTIONS	10379	17802	10362
CVS FLOW STD. CU. METRES(SCF)	61.9 (2186.5)	106.2 (3749.8)	61.8 (2182.9)
HC SAMPLE METER/RANGE/PPM	12.6/ 3/ 126	24.2/ 2/ 24	32.0/ 2/ 32
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	14.5/ 2/ 14	13.5/ 2/ 13
CO SAMPLE METER/RANGE/PPM	36.1/ 3/ 854	9.9/13/ 10	87.0/13/ 87
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.8/13/ 2	1.4/13/ 1
CO2 SAMPLE METER/RANGE/PCT	48.4/ 2/ 2.19	77.5/ 3/ 1.42	42.9/ 2/ 1.89
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .04	3.0/ 3/ .05	1.0/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	26.3/ 2/ 26	13.3/ 2/ 13	20.3/ 2/ 20
NOX BCKGRD METER/RANGE/PPM	1.1/ 2/ 1	.6/ 2/ 1	.4/ 2/ 0
DILUTION FACTOR	5.86	9.43	7.04
HC CONCENTRATION PPM	114	11	20
CO CONCENTRATION PPM	798	8	81
CO2 CONCENTRATION PCT	2.16	1.38	1.86
NOX CONCENTRATION PPM	25.4	12.8	20.0
HC MASS GRAMS	4.08	.69	.73
CO MASS GRAMS	57.54	.93	5.84
CO2 MASS GRAMS	2444.6	2677.2	2106.6
NOX MASS GRAMS	3.09	2.67	2.43
HC GRAMS/KM (GRAMS/MILE)	.71 (1.14)	.11 (.18)	.13 (.20)
CO GRAMS/KM (GRAMS/MILE)	9.96 (16.03)	.15 (.24)	1.02 (1.64)
CO2 GRAMS/KM (GRAMS/MILE)	423.2 (680.9)	435.2 (700.2)	366.8 (590.2)
NOX GRAMS/KM (GRAMS/MILE)	.54 (.86)	.43 (.70)	.42 (.68)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.83 (12.50)	18.60 (12.65)	15.74 (14.94)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.15 (3.82)	5.74 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.24 (.39)
CO GRAMS/KM (GRAMS/MILE)	2.43 (3.91)
CO2 GRAMS/KM (GRAMS/MILE)	413.86 (665.90)
NOX GRAMS/KM (GRAMS/MILE)	.45 (.73)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.86 (13.17)

TABLE C-6. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV. MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 11/16/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-373-F
ODOMETER 5933

BAROMETER 741.93 MM HG(29.21 IN HG)
DRY BULB TEMP. 18.9 DEG C(66.0 DEG F)

RELATIVE HUMIDITY 62 PCT
ABSOLUTE HUMIDITY 8.6 GM/KG(60.2 GRAINS/LB) NOX HUMIDITY C.F. .9351

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10365	17785	10358
CVS FLOW STD. CU. METRES(SCF)	61.0 (2152.9)	104.6 (3693.6)	60.9 (2151.1)
HC SAMPLE METER/RANGE/PPM	11.0/ 3/ 110	20.7/ 2/ 21	29.1/ 2/ 29
HC BCKGRD METER/RANGE/PPM	1.2/ 3/ 12	12.7/ 2/ 13	15.1/ 2/ 15
CO SAMPLE METER/RANGE/PPM	42.2/ 3/ 1012	20.2/13/ 19	24.5/13/ 23
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.9/13/ 1	.3/13/ 0
CO2 SAMPLE METER/RANGE/PCT	47.3/ 2/ 2.13	73.0/ 3/ 1.33	41.9/ 2/ 1.89
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	2.7/ 3/ .09	1.1/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	30.8/ 2/ 31	16.0/ 2/ 16	26.0/ 2/ 26
NOX BCKGRD METER/RANGE/PPM	.9/ 2/ 1	.9/ 2/ 1	1.0/ 2/ 1
DILUTION FACTOR	5.99	10.08	7.27
HC CONCENTRATION PPM	100	9	16
CO CONCENTRATION PPM	948	18	22
CO2 CONCENTRATION PCT	2.09	1.29	1.80
NOX CONCENTRATION PPM	30.1	15.2	25.1
HC MASS GRAMS	3.52	.56	.56
CO MASS GRAMS	67.32	2.14	1.54
CO2 MASS GRAMS	2335.3	2467.2	2013.1
NOX MASS GRAMS	3.28	2.84	2.74
HC GRAMS/KM (GRAMS/MILE)	.61 (.99)	.09 (.15)	.10 (.16)
CO GRAMS/KM (GRAMS/MILE)	11.76 (18.92)	.35 (.56)	.27 (.43)
CO2 GRAMS/KM (GRAMS/MILE)	407.8 (656.2)	402.5 (647.6)	351.8 (566.0)
NOX GRAMS/KM (GRAMS/MILE)	.57 (.92)	.46 (.75)	.48 (.77)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.28 (12.87)	17.21 (13.67)	15.05 (15.63)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.13 (3.81)	5.72 (3.56)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.20 (.32)
CO GRAMS/KM (GRAMS/MILE)	2.70 (4.34)
CO2 GRAMS/KM (GRAMS/MILE)	389.63 (626.91)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.79)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.84 (13.97)

TABLE C-7. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 11/17/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-373-F
ODOMETER 5951

BAROMETER 744.22 MM HG(29.30 IN HG)
DRY BULB TEMP. 20.6 DEG C(69.0 DEG F)

RELATIVE HUMIDITY 36 PCT
ABSOLUTE HUMIDITY 5.5 GM/KG(38.5 GRAINS/LB)

NOX HUMIDITY C.F. .8535

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10359	17788	10352
CVS FLOW STD. CU. METRES(SCF)	61.0 (2155.6)	104.8 (3702.9)	61.0 (2154.8)
HC SAMPLE METER/RANGE/PPM	11.5/ 3/ 115	20.5/ 2/ 20	26.5/ 2/ 26
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	12.1/ 2/ 12	10.4/ 2/ 10
CO SAMPLE METER/RANGE/PPM	38.2/ 3/ 908	11.9/13/ 11	21.2/13/ 20
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.7/13/ 1	.9/13/ 1
CO2 SAMPLE METER/RANGE/PCT	17.5/ 2/ 2.14	76.0/ 3/ 1.39	91.8/ 2/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .04	2.4/ 3/ .04	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	39.9/ 2/ 40	20.3/ 2/ 20	32.3/ 2/ 32
NOX BCKGRD METER/RANGE/PPM	2.5/ 2/ 3	2.1/ 2/ 2	1.8/ 2/ 2
DILUTION FACTOR	5.98	9.64	7.29
HC CONCENTRATION PPM	103	10	18
CO CONCENTRATION PPM	858	10	18
CO2 CONCENTRATION PCT	2.11	1.35	1.80
NOX CONCENTRATION PPM	37.8	18.4	30.7
HC MASS GRAMS	3.64	.58	.62
CO MASS GRAMS	60.98	1.27	1.31
CO2 MASS GRAMS	2354.0	2586.8	2007.1
NOX MASS GRAMS	3.77	3.15	3.06
HC GRAMS/KM (GRAMS/MILE)	.63 (1.01)	.09 (.15)	.11 (.17)
CO GRAMS/KM (GRAMS/MILE)	10.53 (16.95)	.20 (.33)	.23 (.37)
CO2 GRAMS/KM (GRAMS/MILE)	406.6 (654.2)	415.8 (669.0)	348.3 (560.5)
NOX GRAMS/KM (GRAMS/MILE)	.65 (1.05)	.51 (.82)	.53 (.86)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.15 (12.96)	17.77 (13.24)	14.90 (15.79)
CALCULATED DISTANCE KM (MILES)	5.79 (3.60)	6.22 (3.87)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.21 (.34)
CO GRAMS/KM (GRAMS/MILE)	2.35 (3.78)
CO2 GRAMS/KM (GRAMS/MILE)	395.38 (636.17)
NOX GRAMS/KM (GRAMS/MILE)	.54 (.87)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.06 (13.79)

TABLE C-8. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 5 RUN
DATE 11/21/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-373-F
ODOMETER 6002

BAROMETER 745.24 MM HG(29.34 IN HG)
DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)

RELATIVE HUMIDITY 52 PCT
ABSOLUTE HUMIDITY 8.2 GM/KG(57.6 GRAINS/LB)

NOX HUMIDITY C.F. .9244

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1493.2 (58.0)	1493.2 (58.0)	1493.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.9 (111.0)	43.9 (111.0)	43.9 (111.0)
BLOWER REVOLUTIONS	10362	17774	10347
CVS FLOW STD. CU. METRES(SCF)	61.1 (2157.7)	104.8 (3701.1)	61.0 (2154.3)
HC SAMPLE METER/RANGE/PPM	12.9/ 3/ 129	26.2/ 2/ 26	32.0/ 2/ 32
HC BCKGRD METER/RANGE/PPM	2.4/ 3/ 24	18.9/ 2/ 19	16.2/ 2/ 16
CO SAMPLE METER/RANGE/PPM	39.0/ 3/ 928	14.5/13/ 14	53.4/13/ 51
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.6/13/ 2	2.0/13/ 2
CO2 SAMPLE METER/RANGE/PCT	46.8/ 2/ 2.10	75.9/ 3/ 1.38	97.1/ 3/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.1/ 2/ .04	3.3/ 3/ .05	3.5/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	31.9/ 2/ 32	17.0/ 2/ 17	25.6/ 2/ 26
NOX BCKGRD METER/RANGE/PPM	1.6/ 2/ 2	1.4/ 2/ 1	1.4/ 2/ 1
DILUTION FACTOR	6.08	9.65	7.30
HC CONCENTRATION PPM	109	9	18
CO CONCENTRATION PPM	873	12	47
CO2 CONCENTRATION PCT	2.07	1.34	1.78
NOX CONCENTRATION PPM	30.6	15.7	24.4
HC MASS GRAMS	3.84	.56	.63
CO MASS GRAMS	62.14	1.45	3.32
CO2 MASS GRAMS	2316.3	2570.9	1989.6
NOX MASS GRAMS	3.30	2.92	2.63
HC GRAMS/KM (GRAMS/MILE)	.67 (1.08)	.09 (.15)	.11 (.18)
CO GRAMS/KM (GRAMS/MILE)	10.82 (17.41)	.24 (.38)	.58 (.93)
CO2 GRAMS/KM (GRAMS/MILE)	403.3 (649.0)	416.2 (669.7)	346.2 (557.1)
NOX GRAMS/KM (GRAMS/MILE)	.57 (.93)	.47 (.76)	.46 (.74)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.03 (13.05)	17.79 (13.22)	14.83 (15.86)
CALCULATED DISTANCE KM (MILES)	5.74 (3.57)	6.18 (3.84)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.22 (.35)
CO GRAMS/KM (GRAMS/MILE)	2.52 (4.06)
CO2 GRAMS/KM (GRAMS/MILE)	394.34 (634.49)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.79)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.03 (13.81)

TABLE C-9. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/12/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-374-F
ODOMETER 5843

BAROMETER 741.17 MM HG(29.18 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 54 PCT
ABSOLUTE HUMIDITY 9.5 GM/KG(66.7 GRAINS/LB)

NOX HUMIDITY C.F. .9623

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1592.6 (62.7)	1592.6 (62.7)	1592.6 (62.7)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10375	17792	10363
CVS FLOW STD. CU. METRES(SCF)	60.8 (2146.7)	104.2 (3680.9)	60.7 (2143.8)
HC SAMPLE METER/RANGE/PPM	12.5/ 3/ 125	25.9/ 2/ 26	35.3/ 2/ 35
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	14.7/ 2/ 15	15.1/ 2/ 15
CO SAMPLE METER/RANGE/PPM	26.2/ 3/ 608	7.3/13/ 7	26.0/13/ 25
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	.9/13/ 1	.7/13/ 1
CO2 SAMPLE METER/RANGE/PCT	48.0/ 2/ 2.17	77.6/ 3/ 1.42	42.0/ 2/ 1.84
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	2.7/ 3/ .04	1.0/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	28.0/ 2/ 28	13.0/ 2/ 13	20.9/ 2/ 21
NOX BCKGRD METER/RANGE/PPM	.7/ 2/ 1	.4/ 2/ 0	.3/ 2/ 0
DILUTION FACTOR	5.98	9.41	7.24
HC CONCENTRATION PPM	114	13	22
CO CONCENTRATION PPM	569	6	23
CO2 CONCENTRATION PCT	2.13	1.38	1.81
NOX CONCENTRATION PPM	27.4	12.6	20.6
HC MASS GRAMS	4.00	.77	.78
CO MASS GRAMS	40.24	.73	1.61
CO2 MASS GRAMS	2371.8	2639.8	2015.6
NOX MASS GRAMS	3.07	2.43	2.31
HC GRAMS/KM (GRAMS/MILE)	.70 (1.13)	.12 (.20)	.14 (.22)
CO GRAMS/KM (GRAMS/MILE)	7.04 (11.33)	.12 (.19)	.28 (.45)
CO2 GRAMS/KM (GRAMS/MILE)	414.9 (667.6)	427.7 (688.2)	350.1 (563.2)
NOX GRAMS/KM (GRAMS/MILE)	.54 (.86)	.39 (.63)	.40 (.64)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.28 (12.87)	18.28 (12.87)	14.98 (15.71)
CALCULATED DISTANCE KM (MILES)	5.72 (3.55)	6.17 (3.84)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.25 (.40)
CO GRAMS/KM (GRAMS/MILE)	1.59 (2.56)
CO2 GRAMS/KM (GRAMS/MILE)	403.69 (649.55)
NOX GRAMS/KM (GRAMS/MILE)	.42 (.68)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.37 (13.54)

TABLE C-10. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/13/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-274-F
ODOMETER 5861

BAROMETER 740.92 MM HG(29.17 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 51 PCT
ABSOLUTE HUMIDITY 9.3 GM/KG(65.0 GRAINS/LB)

NOX HUMIDITY C.F. .9552

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.2 (108.0)	42.2 (108.0)	42.2 (108.0)
BLOWER REVOLUTIONS	10360	17776	10344
CVS FLOW STD. CU. METRES(SCF)	61.0 (2154.8)	104.7 (3696.8)	60.9 (2151.1)
HC SAMPLE METER/RANGE/PPM	12.3/ 3/ 123	27.3/ 2/ 27	40.7/ 2/ 41
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	16.5/ 2/ 16	24.7/ 2/ 25
CO SAMPLE METER/RANGE/PPM	23.2/ 3/ 536	14.7/13/ 14	44.2/13/ 47
CO BCKGRD METER/RANGE/PPM	.3/ 3/ 7	1.3/13/ 1	1.2/13/ 1
CO2 SAMPLE METER/RANGE/PCT	48.1/ 2/ 2.18	76.9/ 3/ 1.41	42.8/ 2/ 1.89
CO2 BCKGRD METER/RANGE/PCT	1.7/ 2/ .06	3.4/ 3/ .05	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	29.1/ 2/ 29	13.2/ 2/ 13	20.9/ 2/ 21
NOX BCKGRD METER/RANGE/PPM	1.1/ 2/ 1	.8/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	5.99	9.51	7.07
HC CONCENTRATION PPM	111	13	19
CO CONCENTRATION PPM	499	12	43
CO2 CONCENTRATION PCT	2.12	1.36	1.85
NOX CONCENTRATION PPM	28.2	12.5	20.2
HC MASS GRAMS	3.92	.76	.68
CO MASS GRAMS	35.47	1.51	3.08
CO2 MASS GRAMS	2373.5	2604.9	2063.0
NOX MASS GRAMS	3.14	2.39	2.25
HC GRAMS/KM (GRAMS/MILE)	.68 (1.09)	.12 (.20)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	6.15 (9.89)	.24 (.39)	.53 (.86)
CO2 GRAMS/KM (GRAMS/MILE)	411.9 (661.9)	420.9 (676.9)	358.3 (576.5)
NOX GRAMS/KM (GRAMS/MILE)	.54 (.88)	.39 (.62)	.39 (.63)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.06 (13.02)	17.98 (13.09)	15.34 (15.33)
CALCULATED DISTANCE KM (MILES)	5.77 (3.59)	6.20 (3.85)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.24 (.38)
CO GRAMS/KM (GRAMS/MILE)	1.55 (2.49)
CO2 GRAMS/KM (GRAMS/MILE)	401.97 (645.96)
NOX GRAMS/KM (GRAMS/MILE)	.42 (.68)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.27 (13.62)

TABLE C-11. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/15/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-375-F
ODOMETER 5905

BAROMETER 739.65 MM HG(29.12 IN HG)
DRY BULB TEMP. 19.4 DEG C(67.0 DEG F)

RELATIVE HUMIDITY 90 PCT
ABSOLUTE HUMIDITY 13.1 GM/KG(91.7 GRAINS/LB)

NOX HUMIDITY C.F. 1.0849

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.9 (111.0)	43.9 (111.0)	43.9 (111.0)
BLOWER REVOLUTIONS	10372	17802	10369
CVS FLOW STD. CU. METRES(SCF)	60.9 (2149.2)	104.4 (3689.1)	60.8 (2148.7)
HC SAMPLE METER/RANGE/PPM	14.3/ 3/ 143	22.0/ 2/ 22	30.8/ 2/ 31
HC BCKGRD METER/RANGE/PPM	1.5/ 3/ 15	13.3/ 2/ 13	8.8/ 2/ 9
CO SAMPLE METER/RANGE/PPM	27.7/ 3/ 645	8.5/13/ 8	14.0/13/ 13
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.3/13/ 0	.9/13/ 1
CO2 SAMPLE METER/RANGE/PCT	47.3/ 2/ 2.13	76.3/ 3/ 1.39	43.6/ 2/ 1.93
CO2 BCKGRD METER/RANGE/PCT	1.9/ 2/ .05	3.0/ 3/ .05	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	31.8/ 2/ 32	15.2/ 2/ 15	25.9/ 2/ 26
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.1/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	6.08	9.60	6.93
HC CONCENTRATION PPM	130	10	23
CO CONCENTRATION PPM	598	8	12
CO2 CONCENTRATION PCT	2.09	1.35	1.89
NOX CONCENTRATION PPM	30.7	14.2	25.1
HC MASS GRAMS	4.58	.61	.82
CO MASS GRAMS	42.36	.91	.84
CO2 MASS GRAMS	2327.8	2586.3	2105.0
NOX MASS GRAMS	3.88	3.08	3.17
HC GRAMS/KM (GRAMS/MILE)	.80 (1.29)	.10 (.16)	.14 (.23)
CO GRAMS/KM (GRAMS/MILE)	7.40 (11.91)	.15 (.24)	.15 (.23)
CO2 GRAMS/KM (GRAMS/MILE)	406.9 (654.7)	419.7 (675.3)	367.2 (590.8)
NOX GRAMS/KM (GRAMS/MILE)	.68 (1.09)	.50 (.80)	.55 (.89)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.97 (13.09)	17.94 (13.11)	15.70 (14.98)
CALCULATED DISTANCE KM (MILES)	5.72 (3.56)	6.16 (3.83)	5.73 (3.56)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.26 (.41)
CO GRAMS/KM (GRAMS/MILE)	1.65 (2.65)
CO2 GRAMS/KM (GRAMS/MILE)	402.63 (647.83)
NOX GRAMS/KM (GRAMS/MILE)	.55 (.89)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.33 (13.57)

TABLE C-12. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV. MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 11/20/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-375-F
ODOMETER 5977

BAROMETER 747.78 MM HG(29.44 IN HG)
DRY BULB TEMP. 20.6 DEG C(69.0 DEG F)

RELATIVE HUMIDITY 51 PCT
ABSOLUTE HUMIDITY 7.8 GM/KG(54.7 GRAINS/LB)

NOX HUMIDITY C.F. .9127

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10358	17763	10350
CVS FLOW STD. CU. METRES(SCF)	61.7 (2179.9)	105.8 (3738.0)	61.7 (2177.9)
HC SAMPLE METER/RANGE/PPM	14.0/ 3/ 140	21.1/ 2/ 21	28.4/ 2/ 28
HC BCKGRD METER/RANGE/PPM	1.1/ 3/ 11	11.5/ 2/ 11	12.5/ 2/ 13
CO SAMPLE METER/RANGE/PPM	30.8/ 3/ 721	7.7/13/ 7	11.6/13/ 11
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.5/13/ 1	1.3/13/ 1
CO2 SAMPLE METER/RANGE/PCT	46.7/ 2/ 2.10	76.8/ 3/ 1.40	42.6/ 2/ 1.88
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.8/ 3/ .04	1.5/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	30.0/ 2/ 30	13.9/ 2/ 14	25.8/ 2/ 26
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ 0	.3/ 2/ 0	.5/ 2/ 1
DILUTION FACTOR	6.15	9.53	7.13
HC CONCENTRATION PPM	131	11	18
CO CONCENTRATION PPM	678	6	10
CO2 CONCENTRATION PCT	2.06	1.37	1.83
NOX CONCENTRATION PPM	29.7	13.6	25.4
HC MASS GRAMS	4.66	.66	.63
CO MASS GRAMS	48.74	.72	.68
CO2 MASS GRAMS	2323.5	2646.0	2066.1
NOX MASS GRAMS	3.21	2.52	2.73
HC GRAMS/KM (GRAMS/MILE)	.81 (1.30)	.11 (.17)	.11 (.17)
CO GRAMS/KM (GRAMS/MILE)	8.46 (13.61)	.12 (.19)	.12 (.19)
CO2 GRAMS/KM (GRAMS/MILE)	403.3 (648.9)	427.1 (687.2)	357.9 (575.8)
NOX GRAMS/KM (GRAMS/MILE)	.56 (.90)	.41 (.65)	.47 (.76)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.89 (13.15)	18.25 (12.89)	15.30 (15.38)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.20 (3.85)	5.77 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.25 (.41)
CO GRAMS/KM (GRAMS/MILE)	1.85 (2.97)
CO2 GRAMS/KM (GRAMS/MILE)	403.12 (648.62)
NOX GRAMS/KM (GRAMS/MILE)	.46 (.73)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.36 (13.55)

TABLE C-13. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/27/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-371-F
ODOMETER 6031

BAROMETER 740.92 MM HG(29.17 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 30 PCT
ABSOLUTE HUMIDITY 5.5 GM/KG(38.6 GRAINS/LB)

NOX HUMIDITY C.F. .8539

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1493.2 (58.0)	1493.2 (58.0)	1493.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10358	17793	10348
CVS FLOW STD. CU. METRES(SCF)	60.7 (2144.3)	104.3 (3683.1)	60.6 (2141.8)
HC SAMPLE METER/RANGE/PPM	11.5/ 3/ 115	21.7/ 2/ 22	28.0/ 2/ 28
HC BCKGRD METER/RANGE/PPM	1.1/ 3/ 11	12.5/ 2/ 13	11.9/ 2/ 12
CO SAMPLE METER/RANGE/PPM	40.4/ 3/ 965	20.5/13/ 20	21.4/13/ 20
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.9/13/ 2	.6/13/ 1
CO2 SAMPLE METER/RANGE/PCT	47.5/ 2/ 2.14	75.8/ 3/ 1.38	41.9/ 2/ 1.84
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	3.1/ 3/ .05	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	29.3/ 2/ 29	15.8/ 2/ 16	24.5/ 2/ 24
NOX BCKGRD METER/RANGE/PPM	.9/ 2/ 1	1.0/ 2/ 1	1.1/ 2/ 1
DILUTION FACTOR	5.97	9.66	7.27
HC CONCENTRATION PPM	106	10	18
CO CONCENTRATION PPM	914	17	19
CO2 CONCENTRATION PCT	2.10	1.34	1.80
NOX CONCENTRATION PPM	28.6	14.9	23.6
HC MASS GRAMS	3.71	.63	.62
CO MASS GRAMS	64.60	2.08	1.34
CO2 MASS GRAMS	2338.3	2559.7	1997.4
NOX MASS GRAMS	2.83	2.54	2.33
HC GRAMS/KM (GRAMS/MILE)	.64 (1.04)	.10 (.17)	.11 (.17)
CO GRAMS/KM (GRAMS/MILE)	11.22 (18.06)	.34 (.55)	.23 (.37)
CO2 GRAMS/KM (GRAMS/MILE)	406.2 (653.6)	417.3 (671.5)	347.2 (558.7)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.79)	.41 (.67)	.41 (.65)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.18 (12.94)	17.85 (13.18)	14.85 (15.84)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.13 (3.81)	5.75 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.22 (.35)
CO GRAMS/KM (GRAMS/MILE)	2.58 (4.14)
CO2 GRAMS/KM (GRAMS/MILE)	395.67 (636.64)
NOX GRAMS/KM (GRAMS/MILE)	.43 (.69)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.09 (13.76)

TABLE C-14. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/28/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-371-F
ODOMETER 6049

BAROMETER 744.98 MM HG(29.33 IN HG)
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)

RELATIVE HUMIDITY 16 PCT
ABSOLUTE HUMIDITY 3.4 GM/KG(23.6 GRAINS/LB)

NOX HUMIDITY C.F. .8055

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER	1651.0 (65.0)	1651.0 (65.0)	1651.0 (65.0)
DESCRIPTION	1480.8 (58.3)	1480.8 (58.3)	1480.8 (58.3)
BLOWER DIF P MM. H2O(IN. H2O)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER INLET P MM. H2O(IN. H2O)	10367	17789	10359
BLOWER INLET TEMP. DEG. C(DEG. F)	61.0 (2155.9)	104.7 (3699.2)	61.0 (2154.0)
BLOWER REVOLUTIONS			
CVS FLOW STD. CU. METRES(SCF)			
HC SAMPLE METER/RANGE/PPM	9.9/ 3/ 99	19.6/ 2/ 20	28.4/ 2/ 28
HC BCKGRD METER/RANGE/PPM	1.0/ 3/ 10	10.1/ 2/ 10	9.6/ 2/ 10
CO SAMPLE METER/RANGE/PPM	28.8/ 3/ 672	5.0/13/ 5	10.5/13/ 10
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	2.5/13/ 2	6.8/13/ 7
CO2 SAMPLE METER/RANGE/PCT	47.9/ 2/ 2.16	75.8/ 3/ 1.38	42.6/ 2/ 1.88
CO2 BCKGRD METER/RANGE/PCT	1.6/ 2/ .06	2.3/ 3/ .04	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	34.8/ 2/ 35	18.8/ 2/ 19	28.3/ 2/ 28
NOX BCKGRD METER/RANGE/PPM	1.5/ 2/ 2	1.0/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	5.99	9.67	7.13
HC CONCENTRATION PPM	91	11	20
CO CONCENTRATION PPM	636	3	4
CO2 CONCENTRATION PCT	2.12	1.35	1.84
NOX CONCENTRATION PPM	33.6	17.9	27.5
HC MASS GRAMS	3.19	.64	.71
CO MASS GRAMS	45.24	.31	.29
CO2 MASS GRAMS	2365.7	2592.1	2053.9
NOX MASS GRAMS	3.16	2.89	2.59
HC GRAMS/KM (GRAMS/MILE)	.55 (.89)	.10 (.16)	.12 (.20)
CO GRAMS/KM (GRAMS/MILE)	7.86 (12.65)	.05 (.08)	.05 (.08)
CO2 GRAMS/KM (GRAMS/MILE)	411.3 (661.8)	416.3 (669.8)	354.8 (570.9)
NOX GRAMS/KM (GRAMS/MILE)	.55 (.88)	.46 (.75)	.45 (.72)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.16 (12.96)	17.79 (13.23)	15.16 (15.51)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.23 (3.87)	5.79 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.28 (.32)
CO GRAMS/KM (GRAMS/MILE)	1.66 (2.68)
CO2 GRAMS/KM (GRAMS/MILE)	398.37 (640.98)
NOX GRAMS/KM (GRAMS/MILE)	.48 (.77)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.14 (13.72)

TABLE C-15. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 12/ 4/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-371-F
ODOMETER 6133

BAROMETER 740.92 MM HG(29.17 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 14 PCT
ABSOLUTE HUMIDITY 2.4 GM/KG(17.0 GRAINS/LB)

NOX HUMIDITY C.F. .7859

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.2 (108.0)	42.2 (108.0)	42.2 (108.0)
BLOWER REVOLUTIONS	10364	17784	10360
CVS FLOW STD. CU. METRES(SCF)	60.9 (2152.5)	104.6 (3693.2)	60.9 (2151.5)
HC SAMPLE METER/RANGE/PPM	9.9/ 3/ 99	21.4/ 2/ 21	28.7/ 2/ 29
HC BCKGRD METER/RANGE/PPM	.9/ 3/ 9	12.0/ 2/ 12	13.5/ 2/ 13
CO SAMPLE METER/RANGE/PPM	27.8/ 3/ 647	12.9/13/ 12	12.1/13/ 12
CO BCKGRD METER/RANGE/PPM	.6/ 3/ 14	5.6/13/ 5	3.3/13/ 3
CO2 SAMPLE METER/RANGE/PCT	46.2/ 2/ 2.07	75.4/ 3/ 1.37	93.3/ 3/ 1.75
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	3.4/ 3/ .05	2.9/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	34.7/ 2/ 35	18.8/ 2/ 19	27.8/ 2/ 28
NOX BCKGRD METER/RANGE/PPM	1.0/ 2/ 1	.9/ 2/ 1	.6/ 2/ 1
DILUTION FACTOR	6.26	9.72	7.65
HC CONCENTRATION PPM	91	11	17
CO CONCENTRATION PPM	607	7	8
CO2 CONCENTRATION PCT	2.03	1.33	1.71
NOX CONCENTRATION PPM	33.9	18.0	27.3
HC MASS GRAMS	3.21	.64	.60
CO MASS GRAMS	43.09	.87	.60
CO2 MASS GRAMS	2260.1	2543.0	1906.4
NOX MASS GRAMS	3.10	2.83	2.50
HC GRAMS/KM (GRAMS/MILE)	.56 (.90)	.10 (.17)	.10 (.17)
CO GRAMS/KM (GRAMS/MILE)	7.51 (12.09)	.14 (.23)	.10 (.17)
CO2 GRAMS/KM (GRAMS/MILE)	394.1 (634.1)	412.4 (663.5)	331.3 (533.0)
NOX GRAMS/KM (GRAMS/MILE)	.54 (.87)	.46 (.74)	.43 (.70)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.40 (13.52)	17.62 (13.35)	14.16 (16.61)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.17 (3.83)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.20 (.32)
CO GRAMS/KM (GRAMS/MILE)	1.66 (2.67)
CO2 GRAMS/KM (GRAMS/MILE)	386.27 (621.51)
NOX GRAMS/KM (GRAMS/MILE)	.47 (.75)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.62 (14.15)

TABLE C-16. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 12/ 5/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-371-F
ODOMETER 6151

BAROMETER 733.55 MM HG(28.88 IN HG)
DRY BULB TEMP. 20.6 DEG C(69.0 DEG F)

RELATIVE HUMIDITY 29 PCT
ABSOLUTE HUMIDITY 4.5 GM/KG(31.6 GRAINS/LB)

NOX HUMIDITY C.F. .8306

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10363	17798	10360
CVS FLOW STD. CU. METRES(SCF)	60.3 (2128.1)	103.5 (3654.6)	60.2 (2127.1)
HC SAMPLE METER/RANGE/PPM	84.2/ 2/ 84	18.6/ 2/ 19	27.6/ 2/ 28
HC BCKGRD METER/RANGE/PPM	6.9/ 2/ 7	7.5/ 2/ 8	7.1/ 2/ 7
CO SAMPLE METER/RANGE/PPM	26.3/ 3/ 611	9.3/13/ 9	24.3/13/ 23
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.1/13/ 0	.1/13/ 0
CO2 SAMPLE METER/RANGE/PCT	47.3/ 2/ 2.13	76.4/ 3/ 1.40	96.6/ 3/ 1.82
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	3.1/ 3/ .05	3.5/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	32.7/ 2/ 33	16.9/ 2/ 17	24.6/ 2/ 25
NOX BCKGRD METER/RANGE/PPM	.6/ 2/ 1	.7/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	6.10	9.58	7.36
HC CONCENTRATION PPM	78	12	21
CO CONCENTRATION PPM	578	9	22
CO2 CONCENTRATION PCT	2.09	1.35	1.77
NOX CONCENTRATION PPM	32.2	16.3	23.8
HC MASS GRAMS	2.73	.71	.75
CO MASS GRAMS	40.56	1.03	1.54
CO2 MASS GRAMS	2301.6	2563.4	1952.8
NOX MASS GRAMS	3.08	2.68	2.28
HC GRAMS/KM (GRAMS/MILE)	.47 (.76)	.11 (.18)	.13 (.21)
CO GRAMS/KM (GRAMS/MILE)	7.04 (11.32)	.17 (.27)	.27 (.43)
CO2 GRAMS/KM (GRAMS/MILE)	399.3 (642.5)	411.6 (662.3)	338.6 (544.8)
NOX GRAMS/KM (GRAMS/MILE)	.53 (.86)	.43 (.69)	.40 (.64)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.58 (13.38)	17.59 (13.37)	14.49 (16.24)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.23 (3.87)	5.77 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.19 (.31)
CO GRAMS/KM (GRAMS/MILE)	1.61 (2.60)
CO2 GRAMS/KM (GRAMS/MILE)	389.06 (626.00)
NOX GRAMS/KM (GRAMS/MILE)	.44 (.71)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.79 (14.05)

TABLE C-17. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV. MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/29/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-372-F
ODOMETER 6073

BAROMETER 740.16 MM HG(29.14 IN HG)
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

RELATIVE HUMIDITY 26 PCT
ABSOLUTE HUMIDITY 5.1 GM/KG(35.4 GRAINS/LB)

NOX HUMIDITY C.F. .8430

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10370	17791	10353
CVS FLOW STD. CU. METRES(SCF)	60.7 (2144.0)	104.1 (3677.7)	60.6 (2140.0)
HC SAMPLE METER/RANGE/PPM	11.9/ 3/ 119	22.3/ 2/ 22	35.0/ 2/ 35
HC BCKGRD METER/RANGE/PPM	.9/ 3/ 9	9.5/ 2/ 10	10.6/ 2/ 11
CO SAMPLE METER/RANGE/PPM	22.0/ 3/ 507	4.7/13/ 5	6.6/13/ 6
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.8/13/ 1	.9/13/ 1
CO2 SAMPLE METER/RANGE/PCT	47.1/ 2/ 2.12	76.1/ 3/ 1.39	41.7/ 2/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	3.2/ 3/ .05	1.5/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	36.1/ 2/ 36	16.3/ 2/ 16	25.6/ 2/ 26
NOX BCKGRD METER/RANGE/PPM	1.4/ 2/ 1	2.0/ 2/ 2	1.6/ 2/ 2
DILUTION FACTOR	6.15	9.63	7.31
HC CONCENTRATION PPM	111	14	26
CO CONCENTRATION PPM	481	4	5
CO2 CONCENTRATION PCT	2.08	1.35	1.78
NOX CONCENTRATION PPM	34.9	14.5	24.2
HC MASS GRAMS	3.90	.83	.90
CO MASS GRAMS	33.97	.45	.38
CO2 MASS GRAMS	2309.7	2565.2	1477.1
NOX MASS GRAMS	3.42	2.44	2.37
HC GRAMS/KM (GRAMS/MILE)	.68 (1.09)	.13 (.22)	.16 (.25)
CO GRAMS/KM (GRAMS/MILE)	5.91 (9.51)	.07 (.12)	.07 (.11)
CO2 GRAMS/KM (GRAMS/MILE)	401.9 (646.6)	414.7 (667.3)	341.4 (549.4)
NOX GRAMS/KM (GRAMS/MILE)	.59 (.96)	.39 (.63)	.41 (.66)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.64 (13.34)	17.72 (13.27)	14.60 (16.11)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.19 (3.84)	5.79 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.25 (.41)
CO GRAMS/KM (GRAMS/MILE)	1.28 (2.06)
CO2 GRAMS/KM (GRAMS/MILE)	391.86 (630.50)
NOX GRAMS/KM (GRAMS/MILE)	.44 (.71)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.85 (13.96)

TABLE C-18. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV. MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/30/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-372-F
ODOMETER 6092

BAROMETER 739.65 MM HG(29.12 IN HG)
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

RELATIVE HUMIDITY 31 PCT
ABSOLUTE HUMIDITY 5.9 GM/KG(41.2 GRAINS/LB)

NOX HUMIDITY C.F. .8830

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10356	17798	10355
CVS FLOW STD. CU. METRES(SCF)	60.8 (2146.1)	104.4 (3687.9)	60.7 (2145.6)
HC SAMPLE METER/RANGE/PPM	13.3/ 3/ 133	41.6/ 2/ 42	39.5/ 2/ 39
HC BCKGRD METER/RANGE/PPM	2.2/ 3/ 22	39.8/ 2/ 40	13.8/ 2/ 14
CO SAMPLE METER/RANGE/PPM	24.1/ 3/ 558	2.5/13/ 2	4.8/13/ 5
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.9/13/ 1	.2/13/ 0
CO2 SAMPLE METER/RANGE/PCT	47.2/ 2/ 2.13	76.5/ 3/ 1.40	42.1/ 2/ 1.85
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.9/ 3/ .04	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	33.1/ 2/ 33	15.4/ 2/ 15	24.8/ 2/ 25
NOX BCKGRD METER/RANGE/PPM	1.1/ 2/ 1	1.1/ 2/ 1	1.1/ 2/ 1
DILUTION FACTOR	6.11	9.56	7.23
HC CONCENTRATION PPM	115	6	28
CO CONCENTRATION PPM	527	2	4
CO2 CONCENTRATION PCT	2.08	1.36	1.81
NOX CONCENTRATION PPM	32.2	14.4	23.9
HC MASS GRAMS	4.02	.36	.97
CO MASS GRAMS	37.31	.19	.30
CO2 MASS GRAMS	2318.3	2596.0	2012.8
NOX MASS GRAMS	3.23	2.48	2.39
HC GRAMS/KM (GRAMS/MILE)	.70 (1.13)	.06 (.09)	.17 (.27)
CO GRAMS/KM (GRAMS/MILE)	6.50 (10.47)	.03 (.05)	.05 (.09)
CO2 GRAMS/KM (GRAMS/MILE)	404.2 (650.3)	419.0 (674.2)	350.1 (563.3)
NOX GRAMS/KM (GRAMS/MILE)	.56 (.91)	.40 (.65)	.42 (.67)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.78 (13.23)	17.89 (13.15)	14.97 (15.72)
CALCULATED DISTANCE KM (MILES)	5.74 (3.56)	6.20 (3.85)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.22 (.36)
CO GRAMS/KM (GRAMS/MILE)	1.38 (2.21)
CO2 GRAMS/KM (GRAMS/MILE)	397.04 (638.83)
NOX GRAMS/KM (GRAMS/MILE)	.44 (.71)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.07 (13.78)

TABLE C-19. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 12/ 1/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-372-F
ODOMETER 6007

BAROMETER 738.89 MM HG(29.09 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 37 PCT
ABSOLUTE HUMIDITY 6.7 GM/KG(47.2 GRAINS/LB)

NOX HUMIDITY C.F. .8845

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10363	17797	10358
CVS FLOW STD. CU. METRES(SCF)	60.5 (2138.0)	104.0 (3671.6)	60.5 (2136.9)
HC SAMPLE METER/RANGE/PPM	13.3/ 3/ 133	24.7/ 2/ 25	33.1/ 2/ 33
HC BCKGRD METER/RANGE/PPM	1.2/ 3/ 12	11.6/ 2/ 12	10.3/ 2/ 10
CO SAMPLE METER/RANGE/PPM	24.1/ 3/ 558	5.4/13/ 5	6.8/13/ 7
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.1/13/ 0	.1/13/ 0
CO2 SAMPLE METER/RANGE/PCT	46.5/ 2/ 2.09	76.2/ 3/ 1.39	41.4/ 2/ 1.81
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	2.9/ 3/ .04	1.4/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	33.2/ 2/ 33	15.8/ 2/ 16	24.6/ 2/ 25
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.9/ 2/ 2	1.8/ 2/ 2
DILUTION FACTOR	6.22	9.61	7.38
HC CONCENTRATION PPM	123	14	24
CO CONCENTRATION PPM	527	5	6
CO2 CONCENTRATION PCT	2.05	1.35	1.77
NOx CONCENTRATION PPM	32.1	14.1	23.0
HC MASS GRAMS	4.29	.86	.84
CO MASS GRAMS	37.13	.60	.44
CO2 MASS GRAMS	2269.9	2572.7	1960.1
NOX MASS GRAMS	3.29	2.48	2.36
HC GRAMS/KM (GRAMS/MILE)	.75 (1.20)	.14 (.22)	.15 (.24)
CO GRAMS/KM (GRAMS/MILE)	6.48 (10.42)	.10 (.16)	.08 (.12)
CO2 GRAMS/KM (GRAMS/MILE)	396.1 (637.3)	414.7 (667.2)	339.2 (545.8)
NOX GRAMS/KM (GRAMS/MILE)	.57 (.92)	.40 (.64)	.41 (.66)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.44 (13.49)	17.72 (13.27)	14.50 (16.22)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.20 (3.86)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.27 (.43)
CO GRAMS/KM (GRAMS/MILE)	1.41 (2.27)
CO2 GRAMS/KM (GRAMS/MILE)	390.09 (627.66)
NOX GRAMS/KM (GRAMS/MILE)	.44 (.70)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.78 (14.02)

TABLE C-20. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL -0 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/ 8/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-389-F
ODOMETER 6228

BAROMETER 734.31 MM HG(28.91 IN HG)
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

RELATIVE HUMIDITY 69 PCT
ABSOLUTE HUMIDITY 12.0 GM/KG(83.9 GRAINS/LB)

NOX HUMIDITY C.F. 1.0435

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10360	17793	10340
CVS FLOW STD. CU. METRES(SCF)	60.2 (2127.0)	103.4 (3652.4)	60.1 (2122.4)
HC SAMPLE METER/RANGE/PPM	12.4/ 3/ 124	27.8/ 2/ 28	33.7/ 2/ 34
HC BCKGRD METER/RANGE/PPM	1.7/ 3/ 17	17.4/ 2/ 17	16.4/ 2/ 16
CO SAMPLE METER/RANGE/PPM	59.1/ 3/ 1484	37.5/13/ 35	83.8/13/ 84
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.1/13/ 1	.3/13/ 0
CO2 SAMPLE METER/RANGE/PCT	99.9/ 2/ 2.28	83.0/ 3/ 1.53	45.0/ 2/ 2.01
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	3.3/ 3/ .05	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	20.0/ 2/ 20	12.1/ 2/ 12	18.3/ 2/ 18
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	.6/ 2/ 1	.5/ 2/ 1
DILUTION FACTOR	5.52	8.71	6.65
HC CONCENTRATION PPM	110	12	20
CO CONCENTRATION PPM	1384	33	78
CO2 CONCENTRATION PCT	2.24	1.49	1.97
NOX CONCENTRATION PPM	18.9	11.6	17.9
HC MASS GRAMS	3.82	.74	.69
CO MASS GRAMS	97.06	3.94	5.48
CO2 MASS GRAMS	2468.4	2816.5	2166.0
NOX MASS GRAMS	2.28	2.39	2.14
HC GRAMS/KM (GRAMS/MILE)	.66 (1.06)	.12 (.19)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	16.70 (26.87)	.63 (1.02)	.95 (1.53)
CO2 GRAMS/KM (GRAMS/MILE)	424.7 (683.3)	453.6 (729.8)	374.8 (603.1)
NOX GRAMS/KM (GRAMS/MILE)	.39 (.63)	.38 (.62)	.37 (.60)
FUEL CONSUMPTION BY CB L/100KM(MPG)	19.33 (12.17)	19.42 (12.11)	16.08 (14.63)
CALCULATED DISTANCE KM (MILES)	5.81 (3.61)	6.21 (3.86)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.23 (.37)
CO GRAMS/KM (GRAMS/MILE)	4.06 (6.53)
CO2 GRAMS/KM (GRAMS/MILE)	425.94 (685.34)
NOX GRAMS/KM (GRAMS/MILE)	.38 (.62)
FUEL CONSUMPTION BY CB L/100KM (MPG)	18.48 (12.73)

TABLE C-21. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 77 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/ 9/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-389-F
ODOMETER 6239

BAROMETER 733.30 MM HG(28.87 IN HG)
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

RELATIVE HUMIDITY 70 PCT
ABSOLUTE HUMIDITY 13.5 GM/KG(94.7 GRAINS/LB)

NOX HUMIDITY C.F. 1.1019

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10359	17805	10354
CVS FLOW STD. CU. METRES(SCF)	60.2 (2126.5)	103.5 (3654.8)	60.2 (2125.1)
HC SAMPLE METER/RANGE/PPM	12.9/ 3/ 129	28.1/ 2/ 28	41.7/ 2/ 42
HC BCKGRD METER/RANGE/PPM	2.0/ 3/ 20	18.9/ 2/ 19	18.3/ 2/ 18
CO SAMPLE METER/RANGE/PPM	56.9/ 3/ 1419	40.4/13/ 38	79.5/12/ 183
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.9/13/ 1	.5/12/ 1
CO2 SAMPLE METER/RANGE/PCT	50.6/ 2/ 2.32	82.3/ 3/ 1.52	45.0/ 2/ 2.01
CO2 BCKGRD METER/RANGE/PCT	1.6/ 2/ .06	3.0/ 3/ .05	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	19.5/ 2/ 19	12.2/ 2/ 12	16.6/ 2/ 17
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	.8/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	5.44	8.79	6.61
HC CONCENTRATION PPM	113	11	26
CO CONCENTRATION PPM	1322	35	171
CO2 CONCENTRATION PCT	2.27	1.48	1.97
NOX CONCENTRATION PPM	18.4	11.5	15.9
HC MASS GRAMS	3.91	.68	.91
CO MASS GRAMS	92.69	4.23	12.01
CO2 MASS GRAMS	2502.0	2798.5	2168.9
NOX MASS GRAMS	2.34	2.51	2.02
HC GRAMS/KM (GRAMS/MILE)	.67 (1.08)	.11 (.17)	.16 (.25)
CO GRAMS/KM (GRAMS/MILE)	15.95 (25.67)	.67 (1.09)	2.06 (3.32)
CO2 GRAMS/KM (GRAMS/MILE)	430.7 (692.9)	446.7 (718.7)	372.7 (599.6)
NOX GRAMS/KM (GRAMS/MILE)	.40 (.65)	.40 (.64)	.35 (.56)
FUEL CONSUMPTION BY CB L/100KM(MPG)	19.54 (12.04)	19.12 (12.30)	16.07 (14.64)
CALCULATED DISTANCE KM (MILES)	5.81 (3.61)	6.27 (3.89)	5.82 (3.62)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.24 (.38)
CO GRAMS/KM (GRAMS/MILE)	4.22 (6.79)
CO2 GRAMS/KM (GRAMS/MILE)	423.04 (680.68)
NOX GRAMS/KM (GRAMS/MILE)	.39 (.62)
FUEL CONSUMPTION BY CB L/100KM (MPG)	18.37 (12.80)

TABLE C-22. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 78 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 5/10/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-389-F
ODOMETER 6251

BAROMETER 734.31 MM HG(28.91 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 54 PCT
ABSOLUTE HUMIDITY 9.6 GM/KG(67.5 GRAINS/LB)

NOX HUMIDITY C.F. .9658

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10358	17287	10369
CVS FLOW STD. CU. METRES(SCF)	60.3 (2130.1)	103.5 (3656.7)	60.4 (2131.9)
HC SAMPLE METER/RANGE/PPM	11.2/ 3/ 112	28.3/ 2/ 28	46.9/ 2/ 47
HC BCKGRD METER/RANGE/PPM	2.0/ 3/ 20	18.3/ 2/ 18	31.5/ 2/ 31
CO SAMPLE METER/RANGE/PPM	53.5/ 3/ 1321	42.7/13/ 40	77.8/12/ 179
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.3/13/ 1	.8/12/ 1
CO2 SAMPLE METER/RANGE/PCT	50.5/ 2/ 2.31	82.2/ 3/ 1.52	95.4/ 2/ 2.03
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .04	2.9/ 3/ .04	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	21.0/ 2/ 21	12.0/ 2/ 12	16.8/ 2/ 17
NOX BCKGRD METER/RANGE/PPM	1.4/ 2/ 1	.9/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	5.48	8.80	6.54
HC CONCENTRATION PPM	96	12	20
CO CONCENTRATION PPM	1238	37	167
CO2 CONCENTRATION PCT	2.28	1.48	1.99
NOX CONCENTRATION PPM	19.9	11.2	16.0
HC MASS GRAMS	3.33	.72	.70
CO MASS GRAMS	86.93	4.52	11.77
CO2 MASS GRAMS	2512.9	2798.6	2196.5
NOX MASS GRAMS	2.21	2.14	1.79
HC GRAMS/KM (GRAMS/MILE)	.57 (.92)	.12 (.19)	.12 (.20)
CO GRAMS/KM (GRAMS/MILE)	14.97 (24.09)	.73 (1.17)	2.03 (3.27)
CO2 GRAMS/KM (GRAMS/MILE)	432.9 (696.5)	449.6 (723.4)	378.8 (609.5)
NOX GRAMS/KM (GRAMS/MILE)	.38 (.61)	.34 (.55)	.31 (.50)
FUEL CONSUMPTION BY CB L/100KM(MPG)	19.56 (12.03)	19.25 (12.22)	16.32 (14.41)
CALCULATED DISTANCE KM (MILES)	5.80 (3.61)	6.22 (3.87)	5.80 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.21 (.34)
CO GRAMS/KM (GRAMS/MILE)	4.04 (6.50)
CO2 GRAMS/KM (GRAMS/MILE)	426.67 (686.52)
NOX GRAMS/KM (GRAMS/MILE)	.34 (.55)
FUEL CONSUMPTION BY CB L/100KM (MPG)	18.51 (12.71)

TABLE C-23. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 79 CHEV. MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 5/22/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-389-F
ODOMETER 6357

BAROMETER 738.38 MM HG(29.07 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 61 PCT
ABSOLUTE HUMIDITY 10.9 GM/KG(76.6 GRAINS/LB) NOX HUMIDITY C.F. 1.0078

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10338	17773	10341
CVS FLOW STD. CU. METRES(SCF)	60.5 (2136.7)	104.0 (3673.9)	60.5 (2137.6)
HC SAMPLE METER/RANGE/PPM	11.3/ 3/ 113	25.8/ 2/ 26	41.5/ 2/ 41
HC BCKGRD METER/RANGE/PPM	1.5/ 3/ 15	15.4/ 2/ 15	15.1/ 2/ 15
CO SAMPLE METER/RANGE/PPM	42.3/ 3/ 1015	38.9/13/ 37	54.8/13/ 52
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.1/13/ 1	1.3/13/ 1
CO2 SAMPLE METER/RANGE/PCT	48.7/ 2/ 2.21	79.1/ 3/ 1.45	44.0/ 2/ 1.95
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	3.0/ 3/ .05	1.1/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	24.0/ 2/ 24	13.6/ 2/ 14	19.5/ 2/ 19
NOX BCKGRD METER/RANGE/PPM	1.5/ 2/ 2	1.3/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	5.79	9.20	6.84
HC CONCENTRATION PPM	101	12	29
CO CONCENTRATION PPM	950	34	48
CO2 CONCENTRATION PCT	2.16	1.41	1.92
NOX CONCENTRATION PPM	22.8	12.4	18.8
HC MASS GRAMS	3.51	.72	1.00
CO MASS GRAMS	66.89	9.13	3.41
CO2 MASS GRAMS	2397.7	2686.2	2124.9
NOX MASS GRAMS	2.65	2.49	2.20
HC GRAMS/KM (GRAMS/MILE)	.61 (.98)	.12 (.19)	.17 (.28)
CO GRAMS/KM (GRAMS/MILE)	11.57 (18.61)	.66 (1.07)	.59 (.95)
CO2 GRAMS/KM (GRAMS/MILE)	419.5 (667.0)	431.6 (694.4)	366.7 (590.0)
NOX GRAMS/KM (GRAMS/MILE)	.46 (.74)	.40 (.64)	.38 (.61)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.55 (12.68)	18.48 (12.73)	15.71 (14.97)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.22 (3.87)	5.80 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.23 (.38)
CO GRAMS/KM (GRAMS/MILE)	2.90 (4.67)
CO2 GRAMS/KM (GRAMS/MILE)	410.19 (660.00)
NOX GRAMS/KM (GRAMS/MILE)	.41 (.65)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.73 (13.27)

TABLE C-24. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL -0 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 5 RUN
DATE 5/23/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-389-F
ODOMETER 6368

BAROMETER 741.93 MM HG(29.21 IN HG)
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

RELATIVE HUMIDITY 55 PCT
ABSOLUTE HUMIDITY 10.9 GM/KG(72.8 GRAINS/LB)

NOX HUMIDITY C.F. .9899

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1651.0 (65.0)	1651.0 (65.0)	1651.0 (65.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10353	17789	10345
CVS FLOW STD. CU. METRES(SCF)	60.7 (2143.6)	104.3 (3683.0)	60.6 (2141.5)
HC SAMPLE METER/RANGE/PPM	11.0/ 3/ 110	24.1/ 2/ 24	49.7/ 2/ 50
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	14.5/ 2/ 14	13.3/ 2/ 13
CO SAMPLE METER/RANGE/PPM	36.6/ 3/ 867	20.6/13/ 20	47.5/13/ 45
CO BCKGRD METER/RANGE/PPM	.4/ 3/ 9	.8/13/ 1	1.2/13/ 1
CO2 SAMPLE METER/RANGE/PCT	48.8/ 2/ 2.21	29.7/ 3/ 1.46	43.9/ 2/ 1.45
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.7/ 3/ .04	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	25.9/ 2/ 26	13.7/ 2/ 14	20.6/ 2/ 21
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.1/ 2/ 1	1.0/ 2/ 1
DILUTION FACTOR	5.81	9.13	6.85
HC CONCENTRATION PPM	98	11	38
CO CONCENTRATION PPM	867	18	42
CO2 CONCENTRATION PCT	2.17	1.43	1.41
NOX CONCENTRATION PPM	24.8	12.7	19.7
HC MASS GRAMS	3.99	.67	1.34
CO MASS GRAMS	57.09	2.19	2.94
CO2 MASS GRAMS	2415.0	2724.5	2119.4
NOX MASS GRAMS	2.85	2.51	2.27
HC GRAMS/KM (GRAMS/MILE)	.59 (.96)	.11 (.17)	.23 (.37)
CO GRAMS/KM (GRAMS/MILE)	9.84 (15.84)	.35 (.57)	.51 (.82)
CO2 GRAMS/KM (GRAMS/MILE)	416.8 (670.6)	438.7 (705.8)	366.1 (589.1)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.79)	.40 (.65)	.39 (.63)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.53 (12.70)	18.76 (12.54)	15.69 (14.99)
CALCULATED DISTANCE KM (MILES)	5.79 (3.60)	6.21 (3.86)	5.79 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.24 (.39)
CO GRAMS/KM (GRAMS/MILE)	2.37 (3.81)
CO2 GRAMS/KM (GRAMS/MILE)	414.18 (666.41)
NOX GRAMS/KM (GRAMS/MILE)	.42 (.67)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.87 (13.16)

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TABLE C-25. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL -0 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 6 RUN
DATE 5/29/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-389-F
ODOMETER 6379

BAROMETER 744.22 MM HG(29.30 IN HG)
DRY BULB TEMP. 21.7 DEG C(71.0 DEG F)

RELATIVE HUMIDITY 60 PCT
ABSOLUTE HUMIDITY 10.0 GM/KG(69.7 GRAINS/LB)

NOX HUMIDITY C.F. .9756

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10358	17295	10353
CVS FLOW STD. CU. METRES(SCF)	61.3 (2163.6)	105.2 (3716.8)	61.2 (2162.1)
HC SAMPLE METER/RANGE/PPM	11.3/ 3/ 113	23.4/ 2/ 23	43.5/ 2/ 43
HC BCKGRD METER/RANGE/PPM	1.2/ 3/ 12	13.5/ 2/ 13	13.4/ 2/ 13
CO SAMPLE METER/RANGE/PPM	38.8/ 3/ 923	9.2/13/ 9	43.6/13/ 41
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	2.4/13/ 2	2.1/13/ 2
CO2 SAMPLE METER/RANGE/PCT	48.8/ 2/ 2.21	78.8/ 3/ 1.44	44.1/ 2/ 1.96
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .04	2.5/ 3/ .04	1.4/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	28.0/ 2/ 28	15.1/ 2/ 15	21.9/ 2/ 22
NOX BCKGRD METER/RANGE/PPM	1.9/ 2/ 2	1.5/ 2/ 2	1.6/ 2/ 2
DILUTION FACTOR	5.29	9.25	6.82
HC CONCENTRATION PPM	103	11	32
CO CONCENTRATION PPM	864	6	37
CO2 CONCENTRATION PCT	2.18	1.41	1.92
NOX CONCENTRATION PPM	26.4	13.8	20.5
HC MASS GRAMS	3.64	.69	1.13
CO MASS GRAMS	61.64	.79	2.66
CO2 MASS GRAMS	2444.2	2718.8	2148.4
NOX MASS GRAMS	3.02	2.70	2.35
HC GRAMS/KM (GRAMS/MILE)	.63 (1.01)	.11 (.18)	.19 (.31)
CO GRAMS/KM (GRAMS/MILE)	10.59 (17.05)	.13 (.20)	.46 (.74)
CO2 GRAMS/KM (GRAMS/MILE)	420.1 (675.9)	434.3 (698.8)	369.8 (595.0)
NOX GRAMS/KM (GRAMS/MILE)	.52 (.84)	.43 (.69)	.40 (.65)
FUEL CONSUMPTION BY CR L/100KM(MPG)	18.72 (12.56)	18.56 (12.68)	15.94 (14.85)
CALCULATED DISTANCE KM (MILES)	5.82 (3.62)	6.26 (3.89)	5.81 (3.61)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.24 (.39)
CO GRAMS/KM (GRAMS/MILE)	2.38 (3.84)
CO2 GRAMS/KM (GRAMS/MILE)	413.65 (665.57)
NOX GRAMS/KM (GRAMS/MILE)	.44 (.71)
FUEL CONSUMPTION BY CR L/100KM (MPG)	17.95 (13.10)

TABLE C-26. VEHICLE EMISSION RESULTS
FTPL

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 79 CHEV. MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(0 LBS)

TEST NO. 1 RUN
DATE 5/14/79
TIME
DYNO NO. 5
CVS NO. 2
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-385-F
ODOMETER 6236

BAROMETER 745.24 MM HG(29.34 IN HG)
DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)

RELATIVE HUMIDITY 48 PCT
ABSOLUTE HUMIDITY 7.6 GM/KG(53.2 GRAINS/LB) NOX HUMIDITY C.F. .9072

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1651.0 (65.0)	1651.0 (65.0)	1651.0 (65.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10349	17771	10332
CVS FLOW STD. CU. METRES(SCF)	61.0 (2154.8)	104.7 (3699.5)	60.9 (2151.7)
HC SAMPLE METER/RANGE/PPM	11.0/ 3/ 110	24.0/ 2/ 24	42.4/ 2/ 42
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	12.5/ 2/ 13	13.2/ 2/ 13
CO SAMPLE METER/RANGE/PPM	34.3/ 3/ 808	11.0/13/ 11	36.7/13/ 35
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	.9/13/ 1	.4/13/ 0
CO2 SAMPLE METER/RANGE/PCT	48.5/ 2/ 2.20	77.8/ 3/ 1.42	43.5/ 2/ 1.92
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .04	3.0/ 3/ .05	1.0/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	29.6/ 2/ 30	15.4/ 2/ 15	22.7/ 2/ 23
NOX BCKGRD METER/RANGE/PPM	2.5/ 2/ 3	2.3/ 2/ 2	2.4/ 2/ 2
DILUTION FACTOR	5.86	9.39	6.93
HC CONCENTRATION PPM	98	13	36
CO CONCENTRATION PPM	758	9	33
CO2 CONCENTRATION PCT	2.14	1.38	1.89
NOX CONCENTRATION PPM	27.5	13.3	20.6
HC MASS GRAMS	3.46	.78	1.27
CO MASS GRAMS	53.85	1.14	2.31
CO2 MASS GRAMS	2415.5	2653.2	2112.3
NOX MASS GRAMS	2.91	2.43	2.18
HC GRAMS/KM (GRAMS/MILE)	.60 (.96)	.12 (.20)	.22 (.35)
CO GRAMS/KM (GRAMS/MILE)	9.32 (15.00)	.18 (.30)	.40 (.64)
CO2 GRAMS/KM (GRAMS/MILE)	418.2 (672.9)	425.9 (685.2)	363.5 (584.8)
NOX GRAMS/KM (GRAMS/MILE)	.50 (.81)	.39 (.63)	.38 (.60)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.56 (12.68)	18.21 (12.92)	15.57 (15.11)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.23 (3.87)	5.81 (3.61)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.25 (.40)
CO GRAMS/KM (GRAMS/MILE)	2.13 (3.43)
CO2 GRAMS/KM (GRAMS/MILE)	407.12 (655.05)
NOX GRAMS/KM (GRAMS/MILE)	.41 (.66)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.55 (13.40)

TABLE C-27. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 79 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/15/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-385-F
ODOMETER 6287

BAROMETER 745.74 MM HG(29.36 IN HG)
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

RELATIVE HUMIDITY 49 PCT
ABSOLUTE HUMIDITY 8.4 GM/KG(58.6 GRAINS/LB)

NOX HUMIDITY C.F. .9286

BAG RESULTS

	1	2	3
BAG NUMBER	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
DESCRIPTION			
BLOWER DIF P MM. H20(IN. H20)	1201.8 (67.0)	1201.8 (67.0)	1201.8 (67.0)
BLOWER INLET P MM. H20(IN. H20)	1524.0 (60.0)	1524.0 (60.0)	1524.0 (60.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10358	17242	10338
CVS FLOW STD. CU. METRES(SCF)	60.5 (2138.3)	103.7 (3662.0)	60.4 (2133.6)
HC SAMPLE METER/RANGE/PPM	10.0/ 3/ 100	25.6/ 2/ 26	99.0/ 2/ 99
HC BCKGRD METER/RANGE/PPM	1.5/ 3/ 15	15.2/ 2/ 15	12.5/ 2/ 13
CO SAMPLE METER/RANGE/PPM	28.9/ 3/ 674	9.0/13/ 9	20.9/13/ 20
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	2.1/13/ 2	1.6/13/ 2
CO2 SAMPLE METER/RANGE/PCT	42.8/ 2/ 2.16	28.5/ 3/ 1.44	43.0/ 2/ 1.90
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	3.0/ 3/ .05	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	28.2/ 2/ 28	14.4/ 2/ 14	22.3/ 2/ 22
NOX BCKGRD METER/RANGE/PPM	1.8/ 2/ 2	1.5/ 2/ 2	1.1/ 2/ 1
DILUTION FACTOR	6.00	9.29	7.04
HC CONCENTRATION PPM	87	12	38
CO CONCENTRATION PPM	634	7	18
CO2 CONCENTRATION PCT	2.12	1.40	1.86
NOX CONCENTRATION PPM	26.7	13.1	21.4
HC MASS GRAMS	3.06	.72	1.33
CO MASS GRAMS	44.66	.79	1.23
CO2 MASS GRAMS	2346.9	2653.8	2058.0
NOX MASS GRAMS	2.87	2.41	2.29
HC GRAMS/KM (GRAMS/MILE)	.53 (.85)	.12 (.19)	.23 (.37)
CO GRAMS/KM (GRAMS/MILE)	7.69 (12.37)	.13 (.20)	.21 (.34)
CO2 GRAMS/KM (GRAMS/MILE)	403.9 (649.8)	426.4 (686.1)	353.7 (569.2)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.80)	.39 (.62)	.39 (.63)
FUEL CONSUMPTION BY CH L/100KM(MPG)	17.82 (13.20)	18.22 (12.91)	15.14 (15.53)
CALCULATED DISTANCE KM (MILES)	5.81 (3.61)	6.22 (3.87)	5.82 (3.62)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.23 (.37)
CO GRAMS/KM (GRAMS/MILE)	1.72 (2.77)
CO2 GRAMS/KM (GRAMS/MILE)	401.71 (646.35)
NOX GRAMS/KM (GRAMS/MILE)	.41 (.66)
FUEL CONSUMPTION BY CH L/100KM (MPG)	17.29 (13.60)

TABLE C-28. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 79 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 5/25/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE FM-385-F
ODOMETER 6405

BAROMETER 744.93 MM HG(29.31 IN HG)
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)

RELATIVE HUMIDITY 33 PCT
ABSOLUTE HUMIDITY 6.6 GM/KG(46.0 GRAINS/LB)

NOX HUMIDITY C.F. .8801

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10359	17290	10359
CVS FLOW STD. CU. METRES(SCF)	61.9 (2170.2)	105.4 (3722.9)	61.9 (2168.0)
HC SAMPLE METER/RANGE/PPM	10.5/ 3/ 105	26.5/ 2/ 26	42.5/ 2/ 43
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	15.0/ 2/ 15	13.2/ 2/ 13
CO SAMPLE METER/RANGE/PPM	24.7/ 3/ 572	6.4/13/ 6	25.5/13/ 24
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.6/13/ 2	1.1/13/ 1
CO2 SAMPLE METER/RANGE/PCT	49.7/ 2/ 2.21	28.3/ 3/ 1.43	43.6/ 2/ 1.93
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.3/ 3/ .04	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	30.2/ 2/ 30	14.3/ 2/ 14	22.8/ 2/ 23
NOX BCKGRD METER/RANGE/PPM	1.2/ 2/ 1	.7/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	5.89	4.32	6.92
HC CONCENTRATION PPM	95	13	31
CO CONCENTRATION PPM	540	5	22
CO2 CONCENTRATION PCT	2.17	1.40	1.89
NOX CONCENTRATION PPM	29.2	13.7	22.0
HC MASS GRAMS	3.37	.80	1.10
CO MASS GRAMS	38.62	.56	1.58
CO2 MASS GRAMS	2438.5	2308.5	2127.4
NOX MASS GRAMS	3.02	2.43	2.28
HC GRAMS/KM (GRAMS/MILE)	.58 (.93)	.13 (.20)	.19 (.31)
CO GRAMS/KM (GRAMS/MILE)	6.64 (10.68)	.09 (.15)	.27 (.44)
CO2 GRAMS/KM (GRAMS/MILE)	419.2 (674.5)	432.5 (695.8)	367.5 (591.2)
NOX GRAMS/KM (GRAMS/MILE)	.52 (.84)	.39 (.62)	.39 (.63)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.42 (12.77)	18.48 (12.73)	15.73 (14.96)
CALCULATED DISTANCE KM (MILES)	5.82 (3.61)	6.26 (3.89)	5.29 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.24 (.38)
CO GRAMS/KM (GRAMS/MILE)	1.50 (2.41)
CO2 GRAMS/KM (GRAMS/MILE)	411.92 (662.78)
NOX GRAMS/KM (GRAMS/MILE)	.42 (.67)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.71 (13.28)

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TABLE C-29. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 79 CHEV MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/16/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE EM-386-F
ODOMETER 6313

BAROMETER 745.49 MM HG(29.35 IN HG)
DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)

RELATIVE HUMIDITY 60 PCT
ABSOLUTE HUMIDITY 9.5 GM/KG(66.6 GRAINS/LB) NOX HUMIDITY C.F. .9618

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10365	17798	10358
CVS FLOW STD. CU. METRES(SCF)	61.2 (2162.8)	105.1 (3713.2)	61.2 (2161.2)
HC SAMPLE METER/RANGE/PPM	10.5/ 3/ 105	27.5/ 2/ 28	47.2/ 2/ 47
HC BCKGRD METER/RANGE/PPM	1.5/ 3/ 15	16.1/ 2/ 16	14.3/ 2/ 14
CO SAMPLE METER/RANGE/PPM	26.4/ 3/ 613	8.4/13/ 8	20.9/13/ 20
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.1/13/ 1	.2/13/ 1
CO2 SAMPLE METER/RANGE/PCT	48.4/ 2/ 2.19	79.6/ 3/ 1.46	43.7/ 2/ 1.43
CO2 BCKGRD METER/RANGE/PCT	1.0/ 2/ .04	3.5/ 3/ .05	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	30.7/ 2/ 31	15.3/ 2/ 15	23.0/ 2/ 23
NOX BCKGRD METER/RANGE/PPM	1.7/ 2/ 2	1.8/ 2/ 2	1.9/ 2/ 2
DILUTION FACTOR	5.93	9.15	6.90
HC CONCENTRATION PPM	93	13	35
CO CONCENTRATION PPM	574	7	18
CO2 CONCENTRATION PCT	2.16	1.41	1.89
NOX CONCENTRATION PPM	29.3	13.7	21.4
HC MASS GRAMS	3.27	.80	1.23
CO MASS GRAMS	40.90	.83	1.30
CO2 MASS GRAMS	2424.9	2721.7	2123.3
NOX MASS GRAMS	3.30	2.45	2.41
HC GRAMS/KM (GRAMS/MILE)	.57 (.91)	.13 (.21)	.21 (.34)
CO GRAMS/KM (GRAMS/MILE)	7.08 (11.40)	.13 (.22)	.22 (.36)
CO2 GRAMS/KM (GRAMS/MILE)	419.9 (675.7)	437.6 (704.2)	366.4 (589.6)
NOX GRAMS/KM (GRAMS/MILE)	.57 (.92)	.43 (.69)	.42 (.67)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.47 (12.73)	18.71 (12.58)	15.68 (15.00)
CALCULATED DISTANCE KM (MILES)	5.77 (3.59)	6.22 (3.87)	5.79 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.24 (.39)
CO GRAMS/KM (GRAMS/MILE)	1.60 (2.57)
CO2 GRAMS/KM (GRAMS/MILE)	414.39 (666.76)
NOX GRAMS/KM (GRAMS/MILE)	.45 (.73)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.83 (13.20)

TABLE C-30. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 13
VEHICLE MODEL 79 CHEV.MALIBU
ENGINE 5.0 L(305 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/17/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 8.0 KW(10.7 HP)
GASOLINE
ODOMETER 6324

BAROMETER 744.73 MM HG(29.32 IN HG)
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

RELATIVE HUMIDITY 53 PCT
ABSOLUTE HUMIDITY 9.0 GM/KG(63.3 GRAINS/LB)

NOX HUMIDITY C.F. .9928

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1574.8 (62.0)	1574.8 (62.0)	1574.8 (62.0)
BLOWER INLET P MM. H2O(IN. H2O)	1397.0 (55.0)	1397.0 (55.0)	1397.0 (55.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10349	17784	10359
CVS FLOW STD. CU. METRES(SCF)	61.8 (2183.4)	106.2 (3752.2)	61.9 (2186.0)
HC SAMPLE METER/RANGE/PPM	11.1/ 3/ 111	33.6/ 2/ 34	48.8/ 2/ 49
HC BCKGRD METER/RANGE/PPM	1.8/ 3/ 18	21.6/ 2/ 22	19.9/ 2/ 20
CO SAMPLE METER/RANGE/PPM	33.5/ 3/ 788	7.7/13/ 7	28.1/13/ 27
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	3.2/13/ 3	1.8/13/ 2
CO2 SAMPLE METER/RANGE/PCT	47.7/ 2/ 2.15	77.9/ 3/ 1.43	44.1/ 2/ 1.96
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	3.3/ 3/ .05	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	26.7/ 2/ 27	14.2/ 2/ 14	21.5/ 2/ 21
NOX BCKGRD METER/RANGE/PPM	2.3/ 2/ 2	1.4/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	5.99	9.37	6.82
HC CONCENTRATION PPM	96	14	32
CO CONCENTRATION PPM	738	4	24
CO2 CONCENTRATION PCT	2.11	1.38	1.92
NOX CONCENTRATION PPM	24.8	12.9	20.7
HC MASS GRAMS	3.42	.88	1.14
CO MASS GRAMS	53.16	.54	1.71
CO2 MASS GRAMS	2393.5	2682.0	2175.6
NOX MASS GRAMS	2.78	2.49	2.33
HC GRAMS/KM (GRAMS/MILE)	.59 (.95)	.14 (.23)	.20 (.32)
CO GRAMS/KM (GRAMS/MILE)	9.14 (14.70)	.09 (.14)	.29 (.47)
CO2 GRAMS/KM (GRAMS/MILE)	411.4 (662.0)	430.3 (692.4)	375.8 (604.6)
NOX GRAMS/KM (GRAMS/MILE)	.48 (.77)	.40 (.64)	.40 (.65)
FUEL CONSUMPTION BY CB L/100KM(MPG)	18.25 (12.89)	18.39 (12.79)	16.09 (14.62)
CALCULATED DISTANCE KM (MILES)	5.82 (3.62)	6.24 (3.88)	5.79 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.25 (.40)
CO GRAMS/KM (GRAMS/MILE)	2.02 (3.25)
CO2 GRAMS/KM (GRAMS/MILE)	411.45 (662.03)
NOX GRAMS/KM (GRAMS/MILE)	.42 (.67)
FUEL CONSUMPTION BY CB L/100KM (MPG)	17.73 (13.27)

APPENDIX D

MUSTANG FTP RESULTS FOR REGULATED AND UNREGULATED EMISSIONS WITH SEVEN TEST FUELS

TABLE D-1. SUMMARY OF REGULATED EMISSIONS FROM 1978 MUSTANG

Test No.	Fuel	Date	FTP Emissions Rates, g/km			HC Evaporative Emissions, g			Consumption ℓ/100 km
			HC	CO	NO_x	DBL	HSL	Total	
11-1	EM-373-F	11-11-78	0.44	4.13	1.10	0.37	10.08	10.45	16.55
11-2	EM-373-F	11-16-78	0.43	3.60	1.16	0.36	8.74	9.10	16.32
11-3	EM-373-F	11-17-78	0.42	3.51	1.22	0.25	4.84	5.09	16.32
11-4	EM-373-F	11-21-78	0.48	3.86	1.18	0.28	1.32	1.60	16.44
	Average		0.44	3.78	1.17	0.32	6.25	6.56	16.41
12-1	EM-374-F	11-12-78	0.57	3.34	0.93	0.22	28.96	29.18	16.38
12-2	EM-374-F	11-13-78	0.46	2.98	0.93	0.31	25.07	25.38	15.93
	Average		0.52	3.16	0.93	0.27	27.02	27.28	16.16
13-1	EM-375-F	11-14-78	0.52	3.01	0.97	0.33	23.84	24.17	16.21
13-2	EM-375-F	11-15-78	0.45	3.26	0.93	0.36	23.22	23.58	16.37
	Average		0.49	3.14	0.95	0.35	23.53	23.88	16.29
14-1	EM-371-F	11-27-78	0.44	3.44	0.95	0.33	3.89	4.22	16.36
14-2	EM-371-F	11-28-78	0.44	2.67	1.07	0.31	3.18	3.49	16.25
14-3	EM-371-F	12-04-78	0.39	2.22	1.02	0.31	3.06	3.37	15.98
14-4	EM-371-F	12-05-78	0.41	3.20	0.98	0.39	3.09	3.47	15.75
	Average		0.42	2.88	1.01	0.34	3.31	3.64	16.09
15-1	EM-372-F	11-29-78	0.49	1.80	0.83	0.27	12.69	12.96	16.03
15-2	EM-372-F	11-30-78	0.45	1.79	0.83	0.50	15.66	16.16	16.07
15-3	EM-372-F	12-01-78	0.45	1.80	0.86	0.27	14.69	14.96	16.15
	Average		0.46	1.80	0.84	0.34	14.35	14.69	16.08
16-1	EM-389-F	5-08-79	0.62	6.77	0.80	0.50	3.04	3.54	14.15
16-2	EM-389-F	5-09-79	0.58	7.27	0.78	0.36	3.33	3.69	14.02
16-3	EM-389-F	5-10-79	0.60	6.42	0.75	0.45	2.60	3.05	13.91
16-4	EM-389-F	5-22-79	0.45	4.91	0.83	0.39	3.17	3.56	14.71
16-5	EM-389-F	5-23-79	0.48	5.06	0.83	0.42	3.43	3.85	14.29
	Average		0.55	6.09	0.80	0.42	3.11	3.54	14.22
17-1	EM-385-F	5-14-79	0.44	3.77	0.93	0.50	8.83	9.33	14.79
17-2	EM-385-F	5-15-79	0.45	3.06	0.87	0.44	9.30	9.74	14.97
	Average		0.45	3.42	0.90	0.47	9.07	9.54	14.88
18-1	EM-386-F	5-16-79	0.48	4.03	0.86	0.27	3.52	3.79	14.38
18-2	EM-386-F	5-17-79	0.44	3.70	0.88	0.47	4.44	4.91	14.41
	Average		0.46	3.87	0.87	0.37	3.98	4.20	14.40

TABLE D-2. INDIVIDUAL HYDROCARBON EMISSIONS FROM 1978 MUSTANG

Test No.	Fuel	Date	FTP Individual Hydrocarbon Emissions Rates, mg/km							
			Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toluene
11-1	EM-373-F	11-11-78	55.99	38.09	23.55	1.49	5.28	15.04	16.65	12.43
11-2	EM-373-F	11-16-78	46.85	31.88	22.12	1.49	5.90	15.10	14.79	14.17
11-3	EM-373-F	11-17-78	46.92	28.65	21.75	2.11	3.48	13.30	17.21	14.79
11-4	EM-373-F	11-21-78	-----	-----	-----	----	----	-----	-----	-----
	Average		49.92	32.87	22.47	1.70	4.89	14.48	16.22	13.80
12-1	EM-374-F	11-12-78	58.85	38.28	24.11	4.60	4.60	13.42	19.01	24.48
12-2	EM-374-F	11-13-78	54.81	34.30	23.74	1.74	4.47	10.19	14.48	19.39
	Average		56.83	36.29	23.93	3.17	4.54	11.81	16.75	21.94
13-1	EM-375-F	11-14-78	49.40	34.36	21.62	2.11	10.38	12.06	17.27	18.70
13-2	EM-375-F	11-15-78	50.95	36.66	21.37	0.99	16.72	11.37	15.54	18.70
	Average		50.18	35.51	21.50	1.55	13.55	11.72	16.41	18.70
14-1	EM-371-F	11-27-78	56.36	18.14	25.42	3.60	8.26	12.06	12.30	27.34
14-2	EM-371-F	11-28-78	-----	-----	-----	----	----	-----	-----	-----
14-3	EM-371-F	12-04-78	25.10	15.16	23.30	3.42	6.90	10.44	7.39	23.55
14-4	EM-371-F	12-05-78	49.15	16.96	23.49	2.17	3.54	11.62	11.19	26.84
	Average		43.54	16.75	24.07	3.06	6.23	11.37	10.29	25.91
15-1	EM-372-F	11-29-78	53.75	19.20	25.60	1.80	4.29	17.75	7.89	25.54
15-2	EM-372-F	11-30-78	49.28	12.93	23.86	2.73	7.83	8.14	6.09	20.13
15-3	EM-372-F	12-01-78	35.92	15.10	24.48	0.56	8.20	7.33	6.46	21.25
	Average		46.32	15.74	24.65	1.70	6.77	11.07	6.81	22.31
16-1	EM-389-F	5-08-79	65.37	31.82	22.99	3.85	5.16	16.47	25.79	94.20
16-2	EM-389-F	5-09-79	60.71	18.83	22.37	2.67	5.10	80.35	28.40	103.65
16-3	EM-389-F	5-10-79	62.76	20.51	22.18	3.42	4.91	16.59	21.13	97.25
16-4	EM-389-F	5-22-79	49.09	21.87	18.89	1.12	4.47	13.67	15.41	65.06
16-5	EM-389-F	5-23-79	52.94	22.93	16.78	1.80	3.67	14.42	16.59	71.96
	Average		58.17	23.19	20.64	2.57	4.66	28.30	21.46	72.03
17-1	EM-385-F	5-14-79	46.61	21.50	19.33	1.43	4.66	13.48	12.80	61.58
17-2	EM-385-F	5-15-79	44.12	18.70	19.88	1.74	5.65	11.93	11.18	56.67
	Average		45.37	20.10	19.61	1.59	5.16	12.71	11.99	59.13
18-1	EM-386-F	5-16-79	50.77	20.38	20.94	3.67	5.03	13.55	12.18	70.65
18-2	EM-386-F	5-17-79	41.63	9.57	13.05	0.50	2.86	6.09	8.08	35.85
	Average		46.20	14.98	17.00	2.09	3.95	9.82	10.13	53.25

TABLE D-3. ALDEHYDE EMISSIONS FROM 1978 MUSTANG

Test No.	Fuel	Date	FTP Aldehydes Emissions Rates, mg/km								
			Form-	Acet-	Acetone*	Isobutyr-	Methylethyl Ketone	Croton-	Hexan-	Benzene	Total
11-1	EM-373-F	11-11-78	1.86	0	0	0	0	0	0.19	0.41	2.42
11-2	EM-373-F	11-16-78	0.93	0.50	0.12	0	0	0	0.06	0.12	1.73
11-3	EM-373-F	11-17-78	1.30	0	0	0	0	0	0.12	0.31	1.73
11-4	EM-373-F	11-21-78	----	----	----	----	----	----	----	----	----
	Average		1.36	0.17	0.04	0	0	0	0.12	0.28	1.96
12-1	EM-374-F	11-12-78	1.37	1.68	0.50	0	0.19	0	0.19	0.81	4.74
12-2	EM-374-F	11-13-78	1.30	0.44	0.31	0	0	0	0	1.99	4.04
	Average		1.34	1.06	0.41	0	0.10	0	0.10	1.28	4.39
13-1	EM-375-F	11-14-78	1.99	1.74	0.31	0	0.06	0	0.06	0.81	4.97
13-2	EM-375-F	11-15-78	2.30	2.30	0.37	0.12	0.12	0	0.19	1.75	7.15
	Average		2.15	2.02	0.34	0.06	0.06	0	0.13	1.28	6.06
14-1	EM-371-F	11-27-78	----	----	----	----	----	----	----	----	----
14-2	EM-371-F	11-28-78	----	----	----	----	----	----	----	----	----
14-3	EM-371-F	12-04-78	1.49	0	0.12	0	0.19	0	0.19	0.62	2.61
14-4	EM-371-F	12-05-78	1.37	0	0.06	0	0.12	0	0.19	0	1.74
	Average		1.43	0	0.06	0	0.16	0	0.19	0.31	2.18
15-1	EM-372-F	11-29-78	1.50	1.12	0.06	0	0	0	0.12	0	2.80
15-2	EM-372-F	11-30-78	1.43	1.55	0.19	0	0.12	0	0.19	0.48	3.96
15-3	EM-372-F	12-01-78	1.49	0.06	0.06	0	0.06	0	0.19	0.93	2.79
	Average		1.47	0.91	0.10	0	0.06	0	0.17	0.47	3.18
16-1	EM-389-F	5-08-79	2.36	0.25	0.12	0	0.31	0	0	----	3.04
16-2	EM-389-F	5-09-79	1.37	0	0.06	0	0	0	0	----	1.43
16-3	EM-389-F	5-10-79	1.37	0.31	0.06	0	0	0	0	1.24	2.98
16-4	EM-389-F	5-22-79	0.44	0.19	0	0.50	0	0	0	1.93	3.04
16-5	EM-389-F	5-23-79	0	0	0	0	0	0	0	0	0
	Average		1.39	0.25	0.08	0.10	0.06	0	0	1.59	2.62
17-1	EM-385-F	5-14-79	2.55	0.37	0.12	0.37	0	0	0	0.12	3.54
17-2	EM-385-F	5-15-79	1.99	0.31	0.19	0	0	0.06	0	2.67	5.22
	Average		2.27	0.34	0.16	0.19	0	0.03	0	1.40	4.38
18-1	EM-385-F	5-16-79	0.81	0.06	0	0	0	0.12	0	0.12	1.74
18-2	EM-385-F	5-17-79	0.06	0	0	0	0	0.12	0	0.25	0.44
	Average		0.44	0.03	0	0	0	0.12	0	0.19	1.09

* Includes acrolein and propanol

TABLE D-4. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/11/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-373-F
ODOMETER 5663

BAROMETER 746.25 MM HG(29.38 IN HG)
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

RELATIVE HUMIDITY 52 PCT
ABSOLUTE HUMIDITY 10.1 GM/KG(70.6 GRAINS/LB)

NOX HUMIDITY C.F. .9798

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1587.5 (62.5)	1587.5 (62.5)	1587.5 (62.5)
BLOWER INLET P MM. H2O(IN. H2O)	1422.4 (56.0)	1422.4 (56.0)	1397.0 (55.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.2 (108.0)	42.2 (108.0)	42.2 (108.0)
BLOWER REVOLUTIONS	10363	17794	10364
CVS FLOW STD. CU. METRES(SCF)	62.0 (2191.3)	106.5 (3762.4)	62.2 (2198.2)
HC SAMPLE METER/RANGE/PPM	20.3/ 3/ 203	23.6/ 2/ 24	83.2/ 2/ 83
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	11.7/ 2/ 12	10.7/ 2/ 11
CO SAMPLE METER/RANGE/PPM	40.5/ 3/ 967	48.2/13/ 46	84.5/11/ 400
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.1/13/ 1	.3/11/ 1
CO2 SAMPLE METER/RANGE/PCT	44.6/ 2/ 1.98	71.4/ 3/ 1.29	96.3/ 3/ 1.81
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	3.1/ 3/ .05	3.8/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	63.6/ 2/ 64	34.4/ 2/ 34	50.1/ 2/ 50
NOX BCKGRD METER/RANGE/PPM	1.1/ 2/ 1	1.0/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	6.40	10.31	7.22
HC CONCENTRATION PPM	192	13	74
CO CONCENTRATION PPM	912	43	379
CO2 CONCENTRATION PCT	1.94	1.25	1.76
NOX CONCENTRATION PPM	62.7	33.5	49.3
HC MASS GRAMS	6.87	.80	2.66
CO MASS GRAMS	65.92	5.33	27.44
CO2 MASS GRAMS	2205.1	2438.3	2006.4
NOX MASS GRAMS	7.29	6.69	5.75
HC GRAMS/KM (GRAMS/MILE)	1.19 (1.92)	.13 (.21)	.46 (.74)
CO GRAMS/KM (GRAMS/MILE)	11.44 (18.40)	.86 (1.39)	4.77 (7.67)
CO2 GRAMS/KM (GRAMS/MILE)	382.6 (615.6)	395.4 (636.3)	348.5 (560.7)
NOX GRAMS/KM (GRAMS/MILE)	1.26 (2.03)	1.08 (1.75)	1.00 (1.61)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.26 (13.63)	16.95 (13.88)	15.26 (15.42)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.17 (3.83)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.44 (.71)
CO GRAMS/KM (GRAMS/MILE)	4.14 (6.65)
CO2 GRAMS/KM (GRAMS/MILE)	379.85 (611.18)
NOX GRAMS/KM (GRAMS/MILE)	1.10 (1.77)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.55 (14.21)

TABLE D-5. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4443-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 11/16/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-373-F
ODOMETER 5778

BAROMETER 741.43 MM HG(29.19 IN HG)
DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)

RELATIVE HUMIDITY 41 PCT
ABSOLUTE HUMIDITY 6.5 GM/KG(45.2 GRAINS/LB)

NOX HUMIDITY C.F. .8270

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H20(IN. H20)	1607.8 (63.3)	1607.8 (63.3)	1607.8 (63.3)
BLOWER INLET P MM. H20(IN. H20)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10367	17808	10360
CVS FLOW STD. CU. METRES(SCF)	60.9 (2150.7)	104.6 (3694.3)	60.8 (2148.9)
HC SAMPLE METER/RANGE/PPM	21.5/ 3/ 215	25.4/ 2/ 25	71.9/ 2/ 72
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	1.4.2/ 2/ 14	10.4/ 2/ 10
CO SAMPLE METER/RANGE/PPM	42.2/ 3/ 1012	24.9/13/ 24	69.1/11/ 293
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	2.0/13/ 2	.6/11/ 2
CO2 SAMPLE METER/RANGE/PCT	44.9/ 2/ 2.00	71.7/ 3/ 1.30	42.2/ 2/ 1.85
CO2 BCKGRD METER/RANGE/PCT	1.6/ 2/ .06	3.7/ 3/ .06	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	78.1/ 2/ 78	40.1/ 2/ 40	66.1/ 2/ 66
NOX BCKGRD METER/RANGE/PPM	2.3/ 2/ 2	2.1/ 2/ 2	1.5/ 2/ 2
DILUTION FACTOR	6.33	10.28	7.09
HC CONCENTRATION PPM	203	13	63
CO CONCENTRATION PPM	958	21	277
CO2 CONCENTRATION PCT	1.95	1.25	1.81
NOX CONCENTRATION PPM	76.2	38.2	64.8
HC MASS GRAMS	7.14	.76	2.21
CO MASS GRAMS	67.93	2.55	19.64
CO2 MASS GRAMS	2175.6	2389.8	2022.0
NOX MASS GRAMS	7.78	6.70	6.62
HC GRAMS/KM (GRAMS/MILE)	1.23 (1.99)	.12 (.20)	.38 (.62)
CO GRAMS/KM (GRAMS/MILE)	11.75 (18.91)	.41 (.67)	3.40 (5.48)
CO2 GRAMS/KM (GRAMS/MILE)	376.3 (605.5)	388.2 (624.7)	350.4 (563.8)
NOX GRAMS/KM (GRAMS/MILE)	1.35 (2.17)	1.09 (1.75)	1.15 (1.84)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.02 (13.82)	16.61 (14.16)	15.24 (15.44)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.16 (3.83)	5.77 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.43 (.69)
CO GRAMS/KM (GRAMS/MILE)	3.60 (5.79)
CO2 GRAMS/KM (GRAMS/MILE)	375.31 (603.88)
NOX GRAMS/KM (GRAMS/MILE)	1.16 (1.86)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.32 (14.42)

TABLE D-6. VEHICLE EMISSION RESULTS

FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 11/17/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-373-F
ODOMETER 5796

BAROMETER 746.51 MM HG(29.39 IN HG)
DRY BULB TEMP. 20.0 DEG C(68.0 DEG F)

RELATIVE HUMIDITY 39 PCT
ABSOLUTE HUMIDITY 5.7 GM/KG(39.9 GRAINS/LB)

NOX HUMIDITY C.F. .8585

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10363	17285	10362
CVS FLOW STD. CU. METRES(SCF)	61.4 (2169.4)	105.4 (3722.9)	61.4 (2169.0)
HC SAMPLE METER/RANGE/PPM	22.6/ 3/ 226	24.5/ 2/ 24	61.2/ 2/ 61
HC BCKGRD METER/RANGE/PPM	1.6/ 3/ 16	12.5/ 2/ 13	11.5/ 2/ 11
CO SAMPLE METER/RANGE/PPM	47.6/ 3/ 1152	25.8/13/ 24	65.2/12/ 146
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	.9/13/ 1	.5/12/ 1
CO2 SAMPLE METER/RANGE/PCT	45.2/ 2/ 2.02	71.4/ 3/ 1.29	95.4/ 3/ 1.79
CO2 BCKGRD METER/RANGE/PCT	1.6/ 2/ .06	2.7/ 3/ .04	2.5/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	80.5/ 2/ 80	45.4/ 2/ 45	67.4/ 2/ 67
NOX BCKGRD METER/RANGE/PPM	2.7/ 2/ 3	2.4/ 2/ 2	1.5/ 2/ 2
DILUTION FACTOR	6.24	10.33	7.40
HC CONCENTRATION PPM	213	13	51
CO CONCENTRATION PPM	1094	23	139
CO2 CONCENTRATION PCT	1.97	1.26	1.76
NOX CONCENTRATION PPM	78.2	43.2	66.1
HC MASS GRAMS	7.53	.80	1.82
CO MASS GRAMS	78.24	2.79	9.93
CO2 MASS GRAMS	2212.9	2423.4	1927.2
NOX MASS GRAMS	7.89	7.48	6.67
HC GRAMS/KM (GRAMS/MILE)	1.31 (2.11)	.13 (.21)	.31 (.51)
CO GRAMS/KM (GRAMS/MILE)	13.61 (21.90)	.45 (.72)	1.72 (2.76)
CO2 GRAMS/KM (GRAMS/MILE)	385.0 (619.4)	389.4 (626.6)	342.0 (550.2)
NOX GRAMS/KM (GRAMS/MILE)	1.37 (2.21)	1.20 (1.93)	1.15 (1.85)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.52 (13.43)	16.67 (14.11)	14.75 (15.95)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.22 (3.87)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.92 (.68)
CO GRAMS/KM (GRAMS/MILE)	3.51 (5.65)
CO2 GRAMS/KM (GRAMS/MILE)	375.97 (604.13)
NOX GRAMS/KM (GRAMS/MILE)	1.22 (1.97)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.32 (14.42)

TABLE D-7. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 16
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 11/21/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-373-F
ODOMETER 5822

BAROMETER 744.73 MM HG(29.32 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 47 PCT
ABSOLUTE HUMIDITY 8.6 GM/KG(59.9 GRAINS/LB)

NOX HUMIDITY C.F. .9339

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.9 (111.0)	43.9 (111.0)	43.9 (111.0)
BLOWER REVOLUTIONS	10370	17781	10357
CVS FLOW STD. CU. METRES(SCF)	61.4 (2167.7)	105.2 (3716.3)	61.3 (2164.6)
HC SAMPLE METER/RANGE/PPM	29.9/ 3/ 299	27.0/ 2/ 27	59.4/ 2/ 59
HC BCKGRD METER/RANGE/PPM	2.0/ 3/ 20	16.5/ 2/ 16	14.8/ 2/ 15
CO SAMPLE METER/RANGE/PPM	99.5/ 3/ 1209	40.4/13/ 38	77.6/12/ 178
CO BCKGRD METER/RANGE/PPM	.3/ 3/ 7	3.4/13/ 3	.8/12/ 1
CO2 SAMPLE METER/RANGE/PCT	99.3/ 2/ 1.97	72.5/ 3/ 1.32	96.2/ 3/ 1.81
CO2 BCKGRD METER/RANGE/PCT	1.7/ 2/ .06	3.2/ 3/ .05	3.7/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	74.8/ 2/ 75	38.8/ 2/ 39	58.6/ 2/ 59
NOX BCKGRD METER/RANGE/PPM	1.9/ 2/ 2	1.7/ 2/ 2	1.0/ 2/ 1
DILUTION FACTOR	6.35	10.14	7.32
HC CONCENTRATION PPM	262	12	47
CO CONCENTRATION PPM	1139	34	168
CO2 CONCENTRATION PCT	1.92	1.27	1.76
NOX CONCENTRATION PPM	73.2	37.3	57.7
HC MASS GRAMS	9.28	.74	1.65
CO MASS GRAMS	81.43	4.14	12.00
CO2 MASS GRAMS	2152.9	2449.2	1494.7
NOX MASS GRAMS	8.03	7.01	6.32
HC GRAMS/KM (GRAMS/MILE)	1.62 (2.60)	.12 (.19)	.29 (.46)
CO GRAMS/KM (GRAMS/MILE)	14.19 (22.83)	.67 (1.08)	2.09 (3.36)
CO2 GRAMS/KM (GRAMS/MILE)	375.2 (603.7)	396.8 (638.4)	343.4 (552.6)
NOX GRAMS/KM (GRAMS/MILE)	1.40 (2.25)	1.13 (1.83)	1.10 (1.77)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.18 (13.69)	17.00 (13.84)	14.84 (15.85)
CALCULATED DISTANCE KM (MILES)	5.74 (3.57)	6.17 (3.84)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.48 (.77)
CO GRAMS/KM (GRAMS/MILE)	3.84 (6.21)
CO2 GRAMS/KM (GRAMS/MILE)	377.64 (607.62)
NOX GRAMS/KM (GRAMS/MILE)	1.18 (1.90)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.44 (14.31)

TABLE D-8. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/12/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-374-F
ODOMETER 5691

BAROMETER 745.74 MM HG(29.36 IN HG)
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

RELATIVE HUMIDITY 55 PCT
ABSOLUTE HUMIDITY 10.3 GM/KG(72.4 GRAINS/LB)

NOX HUMIDITY C.F. .9877

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1574.8 (62.0)	1574.8 (62.0)	1574.8 (62.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10368	17776	10363
CVS FLOW STD. CU. METRES(SCF)	61.5 (2171.0)	105.4 (3721.9)	61.4 (2169.7)
HC SAMPLE METER/RANGE/PPM	25.9/ 3/ 259	31.0/ 2/ 31	11.7/ 3/ 117
HC BCKGRD METER/RANGE/PPM	1.6/ 3/ 16	17.0/ 2/ 17	1.4/ 3/ 14
CO SAMPLE METER/RANGE/PPM	36.4/ 3/ 862	33.1/13/ 31	68.5/11/ 289
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.8/13/ 1	.1/11/ 0
CO2 SAMPLE METER/RANGE/PCT	99.6/ 2/ 1.98	70.8/ 3/ 1.28	97.7/ 3/ 1.84
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.4/ 3/ .04	2.8/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	59.4/ 2/ 59	27.7/ 2/ 28	43.9/ 2/ 44
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.0/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	6.41	10.42	7.13
HC CONCENTRATION PPM	245	16	105
CO CONCENTRATION PPM	812	29	274
CO2 CONCENTRATION PCT	1.99	1.24	1.80
NOX CONCENTRATION PPM	58.3	26.8	93.2
HC MASS GRAMS	8.70	.95	3.72
CO MASS GRAMS	58.10	3.59	19.58
CO2 MASS GRAMS	2184.6	2393.7	2028.6
NOX MASS GRAMS	6.77	5.34	5.02
HC GRAMS/KM (GRAMS/MILE)	1.52 (2.44)	.15 (.25)	.65 (1.04)
CO GRAMS/KM (GRAMS/MILE)	10.13 (16.31)	.58 (.94)	3.41 (5.48)
CO2 GRAMS/KM (GRAMS/MILE)	381.1 (613.2)	387.4 (623.3)	353.0 (568.0)
NOX GRAMS/KM (GRAMS/MILE)	1.18 (1.90)	.86 (1.39)	.87 (1.40)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.15 (13.72)	16.59 (14.18)	15.38 (15.29)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.18 (3.84)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.57 (.92)
CO GRAMS/KM (GRAMS/MILE)	3.33 (5.37)
CO2 GRAMS/KM (GRAMS/MILE)	376.65 (606.03)
NOX GRAMS/KM (GRAMS/MILE)	.93 (1.50)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.38 (14.36)

TABLE D-9. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 16
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/13/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-374-F
ODOMETER 5708

BAROMETER 741.17 MM HG(29.18 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 54 PCT
ABSOLUTE HUMIDITY 9.5 GM/KG(66.7 GRAINS/LB)

NOX HUMIDITY C.F. .9623

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1574.8 (62.0)	1574.8 (62.0)	1574.8 (62.0)
BLOWER INLET P MM. H2O(IN. H2O)	1414.8 (55.7)	1414.8 (55.7)	1414.8 (55.7)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.2 (108.0)	42.2 (108.0)	42.2 (108.0)
BLOWER REVOLUTIONS	10380	17805	10368
CVS FLOW STD. CU. METRES(SCF)	61.7 (2179.9)	105.9 (3739.0)	61.6 (2176.9)
HC SAMPLE METER/RANGE/PPM	21.7/ 3/ 217	29.0/ 2/ 29	78.1/ 2/ 78
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	1.7/ 2/ 15	11.4/ 2/ 11
CO SAMPLE METER/RANGE/PPM	28.5/ 3/ 664	28.8/13/ 27	76.9/11/ 341
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.5/13/ 1	.3/11/ 1
CO2 SAMPLE METER/RANGE/PCT	93.6/ 2/ 1.93	69.5/ 3/ 1.25	95.8/ 3/ 1.80
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .09	3.6/ 3/ .06	4.0/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	61.3/ 2/ 61	27.8/ 2/ 28	44.0/ 2/ 44
NOX BCKGRD METER/RANGE/PPM	1.1/ 2/ 1	.8/ 2/ 1	.6/ 2/ 1
DILUTION FACTOR	6.65	10.64	7.28
HC CONCENTRATION PPM	205	16	68
CO CONCENTRATION PPM	626	25	322
CO2 CONCENTRATION PCT	1.89	1.20	1.75
NOX CONCENTRATION PPM	60.4	27.1	43.5
HC MASS GRAMS	7.30	.96	2.43
CO MASS GRAMS	45.01	3.06	23.12
CO2 MASS GRAMS	2139.4	2334.2	1972.0
NOX MASS GRAMS	6.86	5.28	4.93
HC GRAMS/KM (GRAMS/MILE)	1.26 (2.03)	.16 (.25)	.42 (.68)
CO GRAMS/KM (GRAMS/MILE)	7.79 (12.53)	.50 (.80)	4.00 (6.44)
CO2 GRAMS/KM (GRAMS/MILE)	370.1 (595.6)	379.6 (610.7)	341.6 (549.6)
NOX GRAMS/KM (GRAMS/MILE)	1.19 (1.91)	.86 (1.38)	.85 (1.37)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.99 (14.26)	16.25 (14.47)	14.90 (15.78)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.15 (3.82)	5.77 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.46 (.74)
CO GRAMS/KM (GRAMS/MILE)	2.98 (4.80)
CO2 GRAMS/KM (GRAMS/MILE)	367.12 (590.70)
NOX GRAMS/KM (GRAMS/MILE)	.93 (1.49)
FUEL CONSUMPTION BY CB L/100KM (MPG)	15.93 (14.77)

TABLE D-10. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/14/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-375-F
ODOMETER 5734

BAROMETER 739.90 MM HG(29.13 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 65 PCT
ABSOLUTE HUMIDITY 11.6 GM/KG(81.4 GRAINS/LB)

NOX HUMIDITY C.F. 1.0312

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1574.8 (62.0)	1574.8 (62.0)	1574.8 (62.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10361	17786	10349
CVS FLOW STD. CU. METRES(SCF)	60.8 (2147.7)	104.4 (3686.5)	60.7 (2144.8)
HC SAMPLE METER/RANGE/PPM	23.4/ 3/ 234	28.1/ 2/ 28	12.7/ 3/ 127
HC BCKGRD METER/RANGE/PPM	1.9/ 3/ 19	18.0/ 2/ 18	1.7/ 3/ 17
CO SAMPLE METER/RANGE/PPM	37.3/ 3/ 885	26.3/13/ 25	87.7/12/ 208
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.0/13/ 1	.3/12/ 1
CO2 SAMPLE METER/RANGE/PCT	45.1/ 2/ 2.01	71.1/ 3/ 1.29	41.5/ 2/ 1.82
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	2.9/ 3/ .04	1.1/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	60.4/ 2/ 60	28.8/ 2/ 29	45.3/ 2/ 45
NOX BCKGRD METER/RANGE/PPM	1.9/ 2/ 2	1.9/ 2/ 2	1.8/ 2/ 2
DILUTION FACTOR	6.33	10.37	7.24
HC CONCENTRATION PPM	218	12	112
CO CONCENTRATION PPM	830	23	196
CO2 CONCENTRATION PCT	1.97	1.25	1.78
NOX CONCENTRATION PPM	58.8	27.1	43.7
HC MASS GRAMS	7.65	.71	3.93
CO MASS GRAMS	58.77	2.79	13.86
CO2 MASS GRAMS	2194.9	2382.7	1983.7
NOX MASS GRAMS	7.05	5.58	5.24
HC GRAMS/KM (GRAMS/MILE)	1.33 (2.13)	.12 (.19)	.68 (1.10)
CO GRAMS/KM (GRAMS/MILE)	10.20 (16.40)	.45 (.73)	2.41 (3.88)
CO2 GRAMS/KM (GRAMS/MILE)	380.8 (612.7)	385.8 (620.7)	344.9 (555.0)
NOX GRAMS/KM (GRAMS/MILE)	1.22 (1.97)	.90 (1.45)	.91 (1.47)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.12 (13.74)	16.51 (14.25)	14.98 (15.71)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.18 (3.84)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.52 (.84)
CO GRAMS/KM (GRAMS/MILE)	3.01 (4.85)
CO2 GRAMS/KM (GRAMS/MILE)	373.51 (600.98)
NOX GRAMS/KM (GRAMS/MILE)	.97 (1.56)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.21 (14.51)

TABLE D-11. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4453-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/15/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-375-F
ODOMETER 5752

BAROMETER 740.66 MM HG(29.16 IN HG)
DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)

RELATIVE HUMIDITY 56 PCT
ABSOLUTE HUMIDITY 8.9 GM/KG(62.5 GRAINS/LB)

NOX HUMIDITY C.F. .9946

BAG RESULTS

	1	2	3
BAG NUMBER	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
DESCRIPTION	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER DIF P MM. H2O(IN. H2O)	1468.1 (57.8)	1468.1 (57.8)	1468.1 (57.8)
BLOWER INLET P MM. H2O(IN. H2O)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER INLET TEMP. DEG. C(DEG. F)			
BLOWER REVOLUTIONS	10367	17770	10359
CVS FLOW STD. CU. METRES(SCF)	60.6 (2139.8)	103.8 (3667.6)	60.5 (2138.0)
HC SAMPLE METER/RANGE/PPM	20.9/ 3/ 209	23.5/ 2/ 23	86.2/ 2/ 86
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	10.9/ 2/ 11	11.1/ 2/ 11
CO SAMPLE METER/RANGE/PPM	38.4/ 3/ 913	21.0/13/ 20	66.3/11/ 276
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.8/13/ 1	.5/11/ 2
CO2 SAMPLE METER/RANGE/PCT	45.4/ 2/ 2.03	72.0/ 3/ 1.30	41.7/ 2/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .04	2.9/ 3/ .04	1.3/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	60.6/ 2/ 61	30.1/ 2/ 30	46.2/ 2/ 46
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.0/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	4.28	10.23	7.19
HC CONCENTRATION PPM	198	14	77
CO CONCENTRATION PPM	859	18	260
CO2 CONCENTRATION PCT	1.99	1.26	1.79
NOX CONCENTRATION PPM	59.5	29.2	45.4
HC MASS GRAMS	6.92	.82	2.68
CO MASS GRAMS	60.60	2.23	18.33
CO2 MASS GRAMS	2208.3	2405.5	1982.3
NOX MASS GRAMS	6.51	5.48	4.47
HC GRAMS/KM (GRAMS/MILE)	1.21 (1.94)	.13 (.21)	.47 (.75)
CO GRAMS/KM (GRAMS/MILE)	10.56 (16.98)	.36 (.58)	3.19 (5.14)
CO2 GRAMS/KM (GRAMS/MILE)	384.6 (618.9)	390.6 (628.5)	345.3 (555.6)
NOX GRAMS/KM (GRAMS/MILE)	1.13 (1.83)	.89 (1.43)	.87 (1.39)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.29 (13.61)	16.72 (14.07)	15.02 (15.67)
CALCULATED DISTANCE KM (MILES)	5.74 (3.57)	6.16 (3.83)	5.74 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.95 (.72)
CO GRAMS/KM (GRAMS/MILE)	3.26 (5.24)
CO2 GRAMS/KM (GRAMS/MILE)	376.99 (606.99)
NOX GRAMS/KM (GRAMS/MILE)	.93 (1.50)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.37 (14.37)

TABLE D-12. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(0 LBS)

TEST NO. 1 RUN
DATE 11/27/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-371-F
ODOMETER 5847

BAROMETER 741.43 MM HG(29.19 IN HG)
D 3 TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 30 PCT
ABSOLUTE HUMIDITY 5.5 GM/KG(38.6 GRAINS/LB)

NOX HUMIDITY C.F. .8538

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10974	17802	10365
CVS FLOW STD. CU. METRES(SCF)	60.9 (2149.8)	104.4 (3688.8)	60.8 (2147.5)
HC SAMPLE METER/RANGE/PPM	21.5/ 3/ 215	27.8/ 2/ 28	62.3/ 2/ 62
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	11.0/ 2/ 11	9.7/ 2/ 10
CO SAMPLE METER/RANGE/PPM	41.9/ 3/ 1004	49.8/13/ 47	75.3/12/ 172
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	2.0/13/ 2	.4/12/ 1
CO2 SAMPLE METER/RANGE/PCT	45.3/ 2/ 2.02	72.0/ 3/ 1.30	97.3/ 3/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	3.2/ 3/ .05	3.6/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	61.4/ 2/ 61	35.8/ 2/ 36	53.0/ 2/ 53
NOX BCKGRD METER/RANGE/PPM	1.8/ 2/ 2	1.6/ 2/ 2	1.6/ 2/ 2
DILUTION FACTOR	6.27	10.21	7.23
HC CONCENTRATION PPM	204	18	54
CO CONCENTRATION PPM	953	44	164
CO2 CONCENTRATION PCT	1.98	1.26	1.78
NOX CONCENTRATION PPM	59.9	39.4	51.6
HC MASS GRAMS	7.16	1.08	1.89
CO MASS GRAMS	67.57	5.36	11.59
CO2 MASS GRAMS	2202.4	2411.4	1986.6
NOX MASS GRAMS	5.95	5.86	5.13
HC GRAMS/KM (GRAMS/MILE)	1.25 (2.01)	.17 (.28)	.33 (.53)
CO GRAMS/KM (GRAMS/MILE)	11.78 (18.96)	.87 (1.39)	2.02 (3.24)
CO2 GRAMS/KM (GRAMS/MILE)	384.0 (617.)	389.8 (627.2)	345.6 (556.1)
NOX GRAMS/KM (GRAMS/MILE)	1.04 (1.67)	.95 (1.52)	.89 (1.43)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.35 (13.56)	16.72 (14.07)	14.93 (15.75)
CALCULATED DISTANCE KM (MILES)	5.74 (3.84)	6.19 (3.84)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.44 (.71)
CO GRAMS/KM (GRAMS/MILE)	3.44 (5.53)
CO2 GRAMS/KM (GRAMS/MILE)	376.49 (605.77)
NOX GRAMS/KM (GRAMS/MILE)	.95 (1.53)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.36 (14.38)

TABLE D-13. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/28/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-371-F
ODOMETER 5866

BAROMETER 747.78 MM HG(29.44 IN HG)
DRY BULB TEMP. 19.4 DEG C(67.0 DEG F)

RELATIVE HUMIDITY 46 PCT
ABSOLUTE HUMIDITY 6.5 GM/KG(45.5 GRAINS/LB)

NOX HUMIDITY C.F. .8782

BAG RESULTS

	1	2	3
BAG NUMBER	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10361	17784	10362
CVS FLOW STD. CU. METRES(SCF)	61.5 (2170.4)	105.5 (3725.3)	61.4 (2170.3)
HC SAMPLE METER/RANGE/PPM	21.6/ 3/ 216	27.4/ 2/ 27	57.1/ 2/ 57
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	10.9/ 2/ 11	10.1/ 2/ 10
CO SAMPLE METER/RANGE/PPM	38.2/ 3/ 908	17.6/13/ 17	93.8/13/ 95
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	1.9/13/ 2	1.1/13/ 1
CO2 SAMPLE METER/RANGE/PCT	44.5/ 2/ 1.98	71.6/ 3/ 1.30	97.3/ 3/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	3.7/ 3/ .06	3.9/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	65.4/ 2/ 65	39.1/ 2/ 39	57.1/ 2/ 57
NOX BCKGRD METER/RANGE/PPM	1.7/ 2/ 2	1.7/ 2/ 2	1.8/ 2/ 2
DILUTION FACTOR	6.43	10.30	7.26
HC CONCENTRATION PPM	204	18	48
CO CONCENTRATION PPM	856	14	90
CO2 CONCENTRATION PCT	1.93	1.25	1.78
NOX CONCENTRATION PPM	64.0	37.6	55.5
HC MASS GRAMS	7.24	1.07	1.72
CO MASS GRAMS	61.26	1.78	6.40
CO2 MASS GRAMS	2179.5	2405.9	2003.1
NOX MASS GRAMS	6.60	6.66	5.73
HC GRAMS/KM (GRAMS/MILE)	1.26 (2.03)	.17 (.28)	.30 (.48)
CO GRAMS/KM (GRAMS/MILE)	10.69 (17.20)	.29 (.46)	1.11 (1.78)
CO2 GRAMS/KM (GRAMS/MILE)	379.5 (610.6)	389.0 (625.9)	346.3 (557.1)
NOX GRAMS/KM (GRAMS/MILE)	1.15 (1.85)	1.08 (1.73)	.99 (1.59)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.09 (13.77)	16.64 (14.13)	14.89 (15.79)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.19 (3.84)	5.78 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.43 (.70)
CO GRAMS/KM (GRAMS/MILE)	2.66 (4.29)
CO2 GRAMS/KM (GRAMS/MILE)	375.25 (603.78)
NOX GRAMS/KM (GRAMS/MILE)	1.07 (1.72)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.25 (14.47)

TABLE D-14. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 12/ 4/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-371-F
ODOMETER 5955

BAROMETER 744.73 MM HG(29.32 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 14 PCT
ABSOLUTE HUMIDITY 2.4 GM/KG(16.7 GRAINS/LB)

NOX HUMIDITY C.F. .7851

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1468.1 (57.8)	1468.1 (57.8)	1468.1 (57.8)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10361	17777	10352
CVS FLOW STD. CU. METRES(SCF)	61.2 (2160.4)	104.9 (3706.3)	61.1 (2158.2)
HC SAMPLE METER/RANGE/PPM	18.2/ 3/ 182	26.5/ 2/ 26	57.1/ 2/ 57
HC BCKGRD METER/RANGE/PPM	1.1/ 3/ 11	10.7/ 2/ 11	9.5/ 2/ 10
CO SAMPLE METER/RANGE/PPM	32.0/ 3/ 751	16.6/13/ 16	86.8/13/ 87
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	7.1/13/ 7	1.8/13/ 2
CO2 SAMPLE METER/RANGE/PCT	43.4/ 2/ 1.92	70.8/ 3/ 1.28	94.7/ 3/ 1.78
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	2.4/ 3/ .04	2.6/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	66.9/ 2/ 67	91.9/ 2/ 92	59.1/ 2/ 59
NOX BCKGRD METER/RANGE/PPM	1.1/ 2/ 1	.8/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	6.67	10.43	7.48
HC CONCENTRATION PPM	173	17	49
CO CONCENTRATION PPM	718	9	82
CO2 CONCENTRATION PCT	1.87	1.25	1.74
NOX CONCENTRATION PPM	66.0	91.2	58.4
HC MASS GRAMS	6.09	1.02	1.72
CO MASS GRAMS	51.13	1.12	5.85
CO2 MASS GRAMS	2097.8	2397.1	1949.9
NOX MASS GRAMS	6.06	6.49	5.36
HC GRAMS/KM (GRAMS/MILE)	1.06 (1.71)	.17 (.27)	.30 (.48)
CO GRAMS/KM (GRAMS/MILE)	8.90 (14.32)	.18 (.29)	1.01 (1.63)
CO2 GRAMS/KM (GRAMS/MILE)	365.1 (587.5)	388.5 (625.1)	338.1 (544.0)
NOX GRAMS/KM (GRAMS/MILE)	1.05 (1.70)	1.05 (1.69)	.93 (1.50)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.32 (14.41)	16.62 (14.16)	14.54 (16.18)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.17 (3.83)	5.77 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.39 (.62)
CO GRAMS/KM (GRAMS/MILE)	2.22 (3.57)
CO2 GRAMS/KM (GRAMS/MILE)	369.76 (594.94)
NOX GRAMS/KM (GRAMS/MILE)	1.02 (1.64)
FUEL CONSUMPTION BY CB L/100KM (MPG)	15.98 (14.72)

TABLE D-15. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 12/ 5/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-371-F
ODOMETER 5974

BAROMETER 738.12 MM HG(29.06 IN HG)
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

RELATIVE HUMIDITY 23 PCT
ABSOLUTE HUMIDITY 4.5 GM/KG(31.5 GRAINS/LB)

NOX HUMIDITY C.F. .8302

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10360	17791	10375
CVS FLOW STD. CU. METRES(SCF)	60.4 (2134.4)	103.8 (3665.1)	60.5 (2137.8)
HC SAMPLE METER/RANGE/PPM	19.8/ 3/ 198	29.8/ 2/ 25	59.8/ 2/ 60
HC BCKGRD METER/RANGE/PPM	.8/ 3/ 8	8.7/ 2/ 9	8.5/ 2/ 9
CO SAMPLE METER/RANGE/PPM	39.6/ 3/ 994	43.4/13/ 41	72.1/12/ 164
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.4/13/ 1	.3/12/ 1
CO2 SAMPLE METER/RANGE/PCT	44.5/ 2/ 1.98	70.6/ 3/ 1.28	93.1/ 3/ 1.74
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	3.5/ 3/ .05	3.6/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	64.2/ 2/ 64	38.4/ 2/ 38	53.9/ 2/ 54
NOX BCKGRD METER/RANGE/PPM	.9/ 2/ 1	1.0/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	6.42	10.45	7.59
HC CONCENTRATION PPM	191	17	52
CO CONCENTRATION PPM	899	39	156
CO2 CONCENTRATION PCT	1.93	1.23	1.70
NOX CONCENTRATION PPM	63.4	37.5	53.1
HC MASS GRAMS	6.67	1.01	1.83
CO MASS GRAMS	63.28	4.67	11.03
CO2 MASS GRAMS	2138.4	2333.4	1879.2
NOX MASS GRAMS	6.09	6.18	5.11
HC GRAMS/KM (GRAMS/MILE)	1.16 (1.86)	.16 (.26)	.32 (.51)
CO GRAMS/KM (GRAMS/MILE)	10.98 (17.67)	.76 (1.22)	1.92 (3.08)
CO2 GRAMS/KM (GRAMS/MILE)	371.2 (597.3)	378.3 (608.7)	326.5 (525.4)
NOX GRAMS/KM (GRAMS/MILE)	1.06 (1.70)	1.00 (1.61)	.89 (1.43)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.74 (14.06)	16.22 (14.50)	14.11 (16.67)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.17 (3.83)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.41 (.66)
CO GRAMS/KM (GRAMS/MILE)	3.20 (5.15)
CO2 GRAMS/KM (GRAMS/MILE)	362.59 (583.40)
NOX GRAMS/KM (GRAMS/MILE)	.98 (1.58)
FUEL CONSUMPTION BY CB L/100KM (MPG)	15.75 (14.94)

TABLE D-16. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/29/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-372-F
ODOMETER 5894

BAROMETER 742.19 MM HG(29.22 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 33 PCT
ABSOLUTE HUMIDITY 5.7 GM/KG(40.1 GRAINS/LB) NOX HUMIDITY C.F. .8592

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	93.3 (110.0)	93.3 (110.0)	93.3 (110.0)
BLOWER REVOLUTIONS	10362	17780	10363
CVS FLOW STD. CU. METRES(SCF)	60.9 (2149.6)	104.4 (3688.4)	60.9 (2149.8)
HC SAMPLE METER/RANGE/PPM	20.5/ 3/ 205	35.0/ 2/ 35	86.2/ 2/ 86
HC BCKGRD METER/RANGE/PPM	1.5/ 3/ 15	13.8/ 2/ 14	10.4/ 2/ 10
CO SAMPLE METER/RANGE/PPM	79.9/11/ 365	16.2/13/ 15	93.5/12/ 229
CO BCKGRD METER/RANGE/PPM	.2/11/ 1	.5/13/ 0	.2/12/ 0
CO2 SAMPLE METER/RANGE/PCT	44.3/ 2/ 1.97	70.9/ 3/ 1.28	94.2/ 3/ 1.77
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	2.9/ 3/ .04	3.1/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	59.7/ 2/ 60	30.2/ 2/ 30	42.4/ 2/ 42
NOX BCKGRD METER/RANGE/PPM	1.8/ 2/ 2	1.7/ 2/ 2	1.3/ 2/ 1
DILUTION FACTOR	6.63	10.41	7.46
HC CONCENTRATION PPM	192	23	77
CO CONCENTRATION PPM	347	15	218
CO2 CONCENTRATION PCT	1.93	1.24	1.73
NOX CONCENTRATION PPM	58.2	28.7	41.3
HC MASS GRAMS	6.75	1.34	2.71
CO MASS GRAMS	24.60	1.76	15.46
CO2 MASS GRAMS	2148.2	2376.1	1923.2
NOX MASS GRAMS	5.82	4.92	4.13
HC GRAMS/KM (GRAMS/MILE)	1.18 (1.90)	.22 (.36)	.47 (.76)
CO GRAMS/KM (GRAMS/MILE)	4.30 (6.91)	.29 (.46)	2.69 (4.33)
CO2 GRAMS/KM (GRAMS/MILE)	375.2 (603.7)	389.1 (626.1)	335.0 (539.1)
NOX GRAMS/KM (GRAMS/MILE)	1.02 (1.64)	.81 (1.30)	.72 (1.16)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.46 (14.29)	16.66 (14.12)	14.54 (16.17)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.11 (3.80)	5.74 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.49 (.79)
CO GRAMS/KM (GRAMS/MILE)	1.79 (2.88)
CO2 GRAMS/KM (GRAMS/MILE)	371.29 (597.40)
NOX GRAMS/KM (GRAMS/MILE)	.83 (1.33)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.03 (14.67)

TABLE D-17. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/30/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-372-F
ODOMETER 5912

BAROMETER 742.19 MM HG(29.22 IN HG)
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

RELATIVE HUMIDITY 29 PCT
ABSOLUTE HUMIDITY 5.6 GM/KG(39.3 GRAINS/LB)

NOX HUMIDITY C.F. .8564

BAG RESULTS

	1	2	3
BAG NUMBER	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
DESCRIPTION	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER DIF P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET P MM. H2O(IN. H2O)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	10361	17787	10356
BLOWER REVOLUTIONS	60.9 (2149.9)	104.5 (3690.1)	60.8 (2148.3)
CVS FLOW STD. CU. METRES(SCF)			
HC SAMPLE METER/RANGE/PPM	20.2/ 3/ 202	31.9/ 2/ 32	66.8/ 2/ 67
HC BCKGRD METER/RANGE/PPM	1.0/ 3/ 10	10.3/ 2/ 10	9.5/ 2/ 10
CO SAMPLE METER/RANGE/PPM	24.7/ 3/ 572	9.6/13/ 9	96.7/13/ 99
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.4/13/ 0	1.2/13/ 1
CO2 SAMPLE METER/RANGE/PCT	44.9/ 2/ 2.00	71.3/ 3/ 1.29	96.8/ 3/ 1.82
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	3.2/ 3/ .05	3.8/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	58.6/ 2/ 59	30.9/ 2/ 31	43.1/ 2/ 43
NOX BCKGRD METER/RANGE/PPM	1.4/ 2/ 1	1.6/ 2/ 2	1.1/ 2/ 1
DILUTION FACTOR	6.46	10.35	7.29
HC CONCENTRATION PPM	194	23	59
CO CONCENTRATION PPM	543	9	93
CO2 CONCENTRATION PCT	1.96	1.25	1.77
NOX CONCENTRATION PPM	57.4	29.5	42.2
HC MASS GRAMS	6.79	1.36	2.06
CO MASS GRAMS	38.47	1.05	6.60
CO2 MASS GRAMS	2184.8	2384.8	1972.5
NOX MASS GRAMS	5.79	5.04	4.20
HC GRAMS/KM (GRAMS/MILE)	1.18 (1.90)	.22 (.35)	.36 (.57)
CO GRAMS/KM (GRAMS/MILE)	6.69 (10.77)	.17 (.27)	1.14 (1.84)
CO2 GRAMS/KM (GRAMS/MILE)	380.2 (611.7)	385.0 (619.5)	342.0 (550.3)
NOX GRAMS/KM (GRAMS/MILE)	1.00 (1.60)	.81 (1.31)	.73 (1.17)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.83 (13.97)	16.47 (14.28)	14.72 (15.98)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.19 (3.85)	5.77 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.46 (.73)
CO GRAMS/KM (GRAMS/MILE)	1.79 (2.88)
CO2 GRAMS/KM (GRAMS/MILE)	372.18 (598.84)
NOX GRAMS/KM (GRAMS/MILE)	.83 (1.33)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.07 (14.64)

TABLE D-18. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL -0 FORD MUSTANG
ENGINE 0.0 L(-0 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 12/ 1/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-372-F
ODOMETER 5930

BAROMETER 739.14 MM HG(29.10 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 39 PCT
ABSOLUTE HUMIDITY 7.0 GM/KG(48.9 GRAINS/LB)

NOX HUMIDITY C.F. .8906

BAG RESULTS	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
DESCRIPTION	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER DIF P MM. H2O(IN. H2O)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER INLET P MM. H2O(IN. H2O)	10363	17791	10363
BLOWER INLET TEMP. DEG. C(DEG. F)	60.8 (2148.9)	104.4 (3688.8)	60.8 (2148.6)
BLOWER REVOLUTIONS			
CVS FLOW STD. CU. METRES(SCF)			
HC SAMPLE METER/RANGE/PPM	17.3/ 3/ 173	32.3/ 2/ 32	81.0/ 2/ 81
HC BCKGRD METER/RANGE/PPM	1.0/ 3/ 10	8.7/ 2/ 9	8.3/ 2/ 8
CO SAMPLE METER/RANGE/PPM	20.6/ 3/ 474	10.0/13/ 10	76.1/12/ 174
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.5/13/ 0	.1/12/ 0
CO2 SAMPLE METER/RANGE/PCT	95.8/ 2/ 2.05	71.3/ 3/ 1.29	95.7/ 3/ 1.80
CO2 BCKGRD METER/RANGE/PCT	1.7/ 2/ .06	2.8/ 3/ .04	3.6/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	57.7/ 2/ 58	29.9/ 2/ 30	43.4/ 2/ 43
NOX BCKGRD METER/RANGE/PPM	.8/ 2/ 1	.8/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	6.35	10.35	7.35
HC CONCENTRATION PPM	165	24	74
CO CONCENTRATION PPM	447	9	166
CO2 CONCENTRATION PCT	2.00	1.25	1.75
NOX CONCENTRATION PPM	57.0	29.2	42.6
HC MASS GRAMS	5.78	1.47	2.59
CO MASS GRAMS	31.71	1.08	11.74
CO2 MASS GRAMS	2229.9	2394.7	1949.9
NOX MASS GRAMS	5.91	5.19	4.42
HC GRAMS/KM (GRAMS/MILE)	1.01 (1.63)	.24 (.38)	.45 (.72)
CO GRAMS/KM (GRAMS/MILE)	5.56 (8.95)	.17 (.28)	2.03 (3.27)
CO2 GRAMS/KM (GRAMS/MILE)	390.5 (628.3)	386.9 (622.4)	337.9 (543.7)
NOX GRAMS/KM (GRAMS/MILE)	1.04 (1.67)	.84 (1.35)	.77 (1.23)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.18 (13.69)	16.56 (14.21)	14.62 (16.09)
CALCULATED DISTANCE KM (MILES)	5.70 (3.54)	6.19 (3.85)	5.77 (3.59)

COMPOSITE FTP RESULTS	
HC GRAMS/KM (GRAMS/MILE)	.96 (.73)
CO GRAMS/KM (GRAMS/MILE)	1.80 (2.89)
CO2 GRAMS/KM (GRAMS/MILE)	374.15 (602.01)
NOX GRAMS/KM (GRAMS/MILE)	.86 (1.38)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.15 (14.56)

TABLE D-19. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4443-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 0.0 L(-0 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/ 8/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-389-F
ODOMETER 6029

BAROMETER 732.79 MM HG(28.85 IN HG)
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)

RELATIVE HUMIDITY 63 PCT
ABSOLUTE HUMIDITY 13.0 GM/KG(91.3 GRAINS/LB)

NOX HUMIDITY C.F. 1.0832

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	33.3 (110.0)	33.3 (110.0)	33.3 (110.0)
BLOWER REVOLUTIONS	10356	17776	10357
CVS FLOW STD. CU. METRES(SCF)	60.0 (2120.7)	103.0 (3639.5)	60.0 (2120.7)
HC SAMPLE METER/RANGE/PPM	29.8/ 3/ 298	43.4/ 2/ 43	12.0/ 3/ 120
HC BCKGRD METER/RANGE/PPM	2.8/ 3/ 28	22.7/ 2/ 23	2.2/ 3/ 22
CO SAMPLE METER/RANGE/PPM	67.1/ 3/ 1729	62.5/12/ 140	91.4/11/ 457
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.3/12/ 1	.2/11/ 1
CO2 SAMPLE METER/RANGE/PCT	95.3/ 2/ 2.02	73.4/ 3/ 1.34	92.7/ 2/ 1.88
CO2 BCKGRD METER/RANGE/PCT	1.6/ 2/ .06	2.5/ 3/ .04	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	52.9/ 2/ 53	20.0/ 2/ 20	40.0/ 2/ 40
NOX BCKGRD METER/RANGE/PPM	1.1/ 2/ 1	.7/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	6.05	9.84	6.92
HC CONCENTRATION PPM	275	23	101
CO CONCENTRATION PPM	1629	133	431
CO2 CONCENTRATION PCT	1.97	1.31	1.84
NOX CONCENTRATION PPM	52.0	19.4	39.3
HC MASS GRAMS	9.51	1.37	3.50
CO MASS GRAMS	113.57	15.96	30.13
CO2 MASS GRAMS	2169.6	2971.2	2028.2
NOX MASS GRAMS	6.47	4.14	4.89
HC GRAMS/KM (GRAMS/MILE)	1.63 (2.63)	.22 (.35)	.60 (.97)
CO GRAMS/KM (GRAMS/MILE)	19.48 (31.35)	2.54 (4.09)	5.18 (8.33)
CO2 GRAMS/KM (GRAMS/MILE)	372.2 (598.8)	393.7 (633.5)	348.6 (560.9)
NOX GRAMS/KM (GRAMS/MILE)	1.11 (1.79)	.66 (1.06)	.84 (1.35)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.41 (13.51)	17.00 (13.83)	15.31 (15.37)
CALCULATED DISTANCE KM (MILES)	5.83 (3.62)	6.28 (3.90)	5.82 (3.62)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.62 (.99)
CO GRAMS/KM (GRAMS/MILE)	6.77 (10.90)
CO2 GRAMS/KM (GRAMS/MILE)	376.89 (606.41)
NOX GRAMS/KM (GRAMS/MILE)	.80 (1.29)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.62 (14.15)

TABLE D-20. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 0.0 L(-0 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/ 9/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-389-F
ODOMETER 6039

BAROMETER 728.98 MM HG(28.70 IN HG)
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)

RELATIVE HUMIDITY 67 PCT
ABSOLUTE HUMIDITY 13.9 GM/KG(97.4 GRAINS/LB)

NOX HUMIDITY C.F. 1.1178

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1442.7 (56.8)	1442.7 (56.8)	1442.7 (56.8)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10359	17778	10348
CVS FLOW STD. CU. METRES(SCF)	59.8 (2111.7)	102.6 (3623.7)	59.7 (2109.1)
HC SAMPLE METER/RANGE/PPM	27.4/ 3/ 274	37.8/ 2/ 38	10.6/ 3/ 106
HC BCKGRD METER/RANGE/PPM	1.8/ 3/ 18	16.2/ 2/ 16	2.1/ 3/ 21
CO SAMPLE METER/RANGE/PPM	65.5/ 3/ 1679	76.2/12/ 174	23.9/ 3/ 553
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.3/12/ 1	.1/ 3/ 2
CO2 SAMPLE METER/RANGE/PCT	45.7/ 2/ 2.09	74.2/ 3/ 1.35	93.0/ 2/ 1.90
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	2.8/ 3/ .09	1.0/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	98.3/ 2/ 98	19.8/ 2/ 20	38.0/ 2/ 38
NOX BCKGRD METER/RANGE/PPM	1.5/ 2/ 2	1.0/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	6.01	9.78	6.84
HC CONCENTRATION PPM	259	23	88
CO CONCENTRATION PPM	1579	166	519
CO2 CONCENTRATION PCT	2.00	1.31	1.87
NOX CONCENTRATION PPM	47.0	18.9	37.2
HC MASS GRAMS	8.93	1.38	3.03
CO MASS GRAMS	109.61	19.79	36.07
CO2 MASS GRAMS	2199.3	2464.3	2091.9
NOX MASS GRAMS	6.01	4.15	4.75
HC GRAMS/KM (GRAMS/MILE)	1.54 (2.49)	.22 (.35)	.52 (.84)
CO GRAMS/KM (GRAMS/MILE)	18.96 (30.51)	3.17 (5.09)	6.24 (10.04)
CO2 GRAMS/KM (GRAMS/MILE)	379.6 (610.8)	394.3 (634.4)	353.1 (568.2)
NOX GRAMS/KM (GRAMS/MILE)	1.04 (1.67)	.66 (1.07)	.82 (1.32)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.68 (13.30)	17.07 (13.78)	15.56 (15.12)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.25 (3.88)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.58 (.93)
CO GRAMS/KM (GRAMS/MILE)	7.27 (11.70)
CO2 GRAMS/KM (GRAMS/MILE)	379.98 (611.39)
NOX GRAMS/KM (GRAMS/MILE)	.78 (1.26)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.78 (14.02)

TABLE D-21. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 5/10/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-389-F
ODOMETER 6058

BAROMETER 733.55 MM HG(28.88 IN HG)
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)

RELATIVE HUMIDITY 43 PCT
ABSOLUTE HUMIDITY 13.0 GM/KG(91.2 GRAINS/LB)

NOX HUMIDITY C.F. 1.0826

BAG RESULTS

	1	2	3
BAG NUMBER	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
DESCRIPTION	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER DIF P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET P MM. H2O(IN. H2O)	93.3 (110.0)	93.3 (110.0)	93.3 (110.0)
BLOWER INLET TEMP. DEG. C(DEG. F)			
BLOWER REVOLUTIONS	10363	17787	10355
CVS FLOW STD. CU. METRES(SCF)	60.3 (2128.2)	103.4 (3652.5)	60.2 (2126.2)
HC SAMPLE METER/RANGE/PPM	27.8/ 3/ 278	39.3/ 2/ 39	13.9/ 3/ 139
HC BCKGRD METER/RANGE/PPM	2.1/ 3/ 21	23.2/ 2/ 23	2.1/ 3/ 21
CO SAMPLE METER/RANGE/PPM	65.6/ 3/ 1682	94.2/13/ 96	22.1/ 3/ 510
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	.4/13/ 0	.2/ 3/ 5
CO2 SAMPLE METER/RANGE/PCT	95.3/ 2/ 2.02	75.0/ 3/ 1.37	93.0/ 2/ 1.90
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.2/ 3/ .03	1.1/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	47.2/ 2/ 47	20.1/ 2/ 20	37.6/ 2/ 38
NOX BCKGRD METER/RANGE/PPM	1.7/ 2/ 2	1.2/ 2/ 1	1.7/ 2/ 2
DILUTION FACTOR	6.07	9.71	6.84
HC CONCENTRATION PPM	260	18	116
CO CONCENTRATION PPM	1578	91	477
CO2 CONCENTRATION PCT	1.98	1.34	1.86
NOX CONCENTRATION PPM	45.8	19.0	36.1
HC MASS GRAMS	9.05	1.10	4.03
CO MASS GRAMS	110.73	10.94	33.43
CO2 MASS GRAMS	2183.9	2530.8	2054.6
NOX MASS GRAMS	5.71	9.07	4.51
HC GRAMS/KM (GRAMS/MILE)	1.54 (2.51)	.18 (.28)	.69 (1.12)
CO GRAMS/KM (GRAMS/MILE)	19.06 (30.67)	1.74 (2.81)	5.76 (9.26)
CO2 GRAMS/KM (GRAMS/MILE)	376.0 (604.9)	403.5 (649.2)	353.8 (569.3)
NOX GRAMS/KM (GRAMS/MILE)	.98 (1.58)	.65 (1.05)	.78 (1.25)
FUEL CONSUMPTION AV CB L/100KM(MPG)	17.54 (13.41)	17.36 (13.55)	15.58 (15.10)
CALCULATED DISTANCE KM (MILES)	5.81 (3.61)	6.27 (3.90)	5.81 (3.61)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.60 (.97)
CO GRAMS/KM (GRAMS/MILE)	6.42 (10.34)
CO2 GRAMS/KM (GRAMS/MILE)	384.18 (618.14)
NOX GRAMS/KM (GRAMS/MILE)	.75 (1.21)
FUEL CONSUMPTION AV CB L/100KM (MPG)	16.91 (13.91)

TABLE D-22. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 5/22/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-389-F
ODOMETER 6156

BAROMETER 737.62 MM HG(29.04 IN HG)
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)

RELATIVE HUMIDITY 43 PCT
ABSOLUTE HUMIDITY 9.1 GM/KG(63.5 GRAINS/LB)

NOX HUMIDITY C.F. .9485

BAG RESULTS	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER	1651.0 (65.0)	1651.0 (65.0)	1651.0 (65.0)
DESCRIPTION	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER DIF P MM. H2O(IN. H2O)	93.3 (110.0)	93.3 (110.0)	93.3 (110.0)
BLOWER INLET P MM. H2O(IN. H2O)	10341	17806	10343
BLOWER INLET TEMP. DEG. C(DEG. F)	60.2 (2124.8)	103.6 (3659.1)	60.2 (2125.1)
BLOWER REVOLUTIONS			
CVS FLOW STD. CU. METRES(SCF)			
HC SAMPLE METER/RANGE/PPM	21.2/ 3/ 212	24.9/ 2/ 25	93.0/ 2/ 93
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	12.3/ 2/ 12	11.2/ 2/ 11
CO SAMPLE METER/RANGE/PPM	53.1/ 3/ 1310	66.6/13/ 65	81.8/11/ 379
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.8/13/ 1	.9/11/ 1
CO2 SAMPLE METER/RANGE/PCT	93.6/ 2/ 1.93	71.6/ 3/ 1.30	96.5/ 3/ 1.81
CO2 BCKGRD METER/RANGE/PCT	1.9/ 2/ .05	2.7/ 3/ .04	2.3/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	55.1/ 2/ 55	26.7/ 2/ 27	44.3/ 2/ 44
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.5/ 2/ 2	1.5/ 2/ 2
DILUTION FACTOR	6.96	10.26	7.20
HC CONCENTRATION PPM	201	19	83
CO CONCENTRATION PPM	1241	61	360
CO2 CONCENTRATION PCT	1.89	1.26	1.78
NOX CONCENTRATION PPM	54.0	25.3	43.0
HC MASS GRAMS	6.97	.82	2.89
CO MASS GRAMS	86.95	7.42	25.21
CO2 MASS GRAMS	2078.8	2389.7	1966.3
NOX MASS GRAMS	5.89	4.76	4.70
HC GRAMS/KM (GRAMS/MILE)	1.20 (1.93)	.13 (.21)	.50 (.80)
CO GRAMS/KM (GRAMS/MILE)	14.99 (24.12)	1.19 (1.91)	4.35 (7.00)
CO2 GRAMS/KM (GRAMS/MILE)	358.5 (576.7)	382.1 (614.9)	339.2 (545.7)
NOX GRAMS/KM (GRAMS/MILE)	1.02 (1.64)	.76 (1.23)	.81 (1.30)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.47 (14.29)	16.91 (14.34)	14.84 (15.86)
CALCULATED DISTANCE KM (MILES)	5.80 (3.60)	6.25 (3.89)	5.80 (3.60)

COMPOSITE FTP RESULTS	
HC GRAMS/KM (GRAMS/MILE)	.45 (.73)
CO GRAMS/KM (GRAMS/MILE)	4.41 (7.09)
CO2 GRAMS/KM (GRAMS/MILE)	365.45 (588.01)
NOX GRAMS/KM (GRAMS/MILE)	.83 (1.33)
FUEL CONSUMPTION BY CB L/100KM (MPG)	15.99 (14.71)

TABLE D-23. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A4
GVW [illegible] KG(-0 LBS)

TEST NO. 5 RUN
DATE 5/23/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-3489-F
ODOMETER 6167

BAROMETER 741.93 MB HG(29.19 IN HG)
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

RELATIVE HUMIDITY 52 PCT
ABSOLUTE HUMIDITY 10.2 GM/KG(71.2 GRAINS/LB) NOX HUMIDITY C.F. .9825

BAG RESULTS	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H20(IN. H20)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H20(IN. H20)	1422.4 (56.0)	1422.4 (56.0)	1422.4 (56.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	93.3 (110.0)	93.3 (110.0)	93.3 (110.0)
BLOWER REVOLUTIONS	10320	17780	10358
CVS FLOW STD. CU. METRES(SCF)	61.3 (2166.0)	105.1 (3712.7)	61.2 (2163.2)
HC SAMPLE METER/RANGE/PPM	22.5/ 3/ 225	27.0/ 2/ 27	87.8/ 2/ 88
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	11.3/ 2/ 11	12.1/ 2/ 12
CO SAMPLE METER/RANGE/PPM	51.6/ 3/ 1248	88.8/13/ 89	79.7/11/ 364
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	.8/13/ 1	.2/11/ 1
CO2 SAMPLE METER/RANGE/PCT	93.9/ 2/ 1.95	72.7/ 3/ 1.32	91.7/ 2/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.1/ 2/ .04	2.7/ 3/ .04	1.1/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	56.0/ 2/ 56	29.6/ 2/ 25	93.9/ 2/ 94
NOX BCKGRD METER/RANGE/PPM	1.6/ 2/ 2	1.6/ 2/ 2	1.6/ 2/ 2
DILUTION FACTOR	6.92	10.07	7.16
HC CONCENTRATION PPM	214	17	77
CO CONCENTRATION PPM	1195	85	394
CO2 CONCENTRATION PCT	1.91	1.28	1.79
NOX CONCENTRATION PPM	54.6	23.2	92.5
HC MASS GRAMS	7.57	1.02	2.73
CO MASS GRAMS	85.35	10.39	24.57
CO2 MASS GRAMS	2197.6	2468.2	2012.7
NOX MASS GRAMS	6.30	4.68	4.89
HC GRAMS/KM (GRAMS/MILE)	1.31 (2.10)	.14 (.26)	.47 (.76)
CO GRAMS/KM (GRAMS/MILE)	14.74 (23.72)	1.66 (2.67)	4.22 (6.79)
CO2 GRAMS/KM (GRAMS/MILE)	370.8 (596.7)	394.6 (634.8)	346.0 (556.6)
NOX GRAMS/KM (GRAMS/MILE)	1.09 (1.75)	.73 (1.18)	.84 (1.35)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.99 (13.84)	16.97 (13.86)	15.11 (15.57)
CALCULATED DISTANCE KM (MILES)	5.79 (3.60)	6.26 (3.89)	5.82 (3.62)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.98 (.78)
CO GRAMS/KM (GRAMS/MILE)	5.07 (8.15)
CO2 GRAMS/KM (GRAMS/MILE)	376.31 (605.98)
NOX GRAMS/KM (GRAMS/MILE)	.89 (1.34)
FUEL CONSUMPTION BY CB L/100KM (MPG)	14.97 (14.29)

TABLE D-24. VEHICLE EMISSION RESULTS
FTPC + HFET

PROJECT NO. 11-4493-001

VEHICLE NO. 1C
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/14/79
TIME
DYNO NO. 6
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE FM-385-F
ODOMETER 6076

BAROMETER 743.20 MM HG(29.26 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 44 PCT
ABSOLUTE HUMIDITY 7.9 GM/KG(55.6 GRAINS/LB) NOX HUMIDITY C.F. .9163

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOW / DIF P MM. H20(IN. H20)	1701.8 (67.0)	1701.8 (67.0)	1701.8 (67.0)
BLOWER INLET P MM. H20(IN. H20)	1524.0 (60.0)	1524.0 (60.0)	1524.0 (60.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10359	17772	10350
CVS FLOW STD. CU. METRES(SCF)	60.3 (2129.2)	103.4 (3652.5)	60.2 (2127.1)
HC SAMPLE METER/RANGE/PPM	20.5/ 3/ 205	26.5/ 2/ 26	80.3/ 2/ 80
HC BCKGRD METER/RANGE/PPM	1.9/ 3/ 19	11.6/ 2/ 12	11.1/ 2/ 11
CO SAMPLE METER/RANGE/PPM	91.9/ 3/ 991	52.0/13/ 50	70.7/11/ 303
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.7/13/ 1	.3/11/ 1
CO2 SAMPLE METER/RANGE/PCT	95.1/ 2/ 2.01	70.9/ 3/ 1.28	96.8/ 3/ 1.82
CO2 BCKGRD METER/RANGE/PCT	1.2/ 2/ .04	2.8/ 3/ .04	3.1/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	69.3/ 2/ 67	31.6/ 2/ 32	48.6/ 2/ 49
NOX BCKGRD METER/RANGE/PPM	2.2/ 2/ 2	1.8/ 2/ 2	1.5/ 2/ 2
DILUTION FACTOR	6.31	10.39	7.21
HC CONCENTRATION PPM	193	16	71
CO CONCENTRATION PPM	937	47	287
CO2 CONCENTRATION PCT	1.97	1.24	1.78
NOX CONCENTRATION PPM	65.4	30.0	47.3
HC MASS GRAMS	6.72	.96	2.96
CO MASS GRAMS	65.77	5.67	20.15
CO2 MASS GRAMS	2179.3	2355.6	1963.4
NOX MASS GRAMS	6.92	5.43	4.99
HC GRAMS/KM (GRAMS/MILE)	1.14 (1.87)	.15 (.25)	.42 (.68)
CO GRAMS/KM (GRAMS/MILE)	11.36 (18.28)	.90 (1.44)	3.46 (5.57)
CO2 GRAMS/KM (GRAMS/MILE)	376.6 (605.9)	375.8 (604.7)	337.3 (542.8)
NOX GRAMS/KM (GRAMS/MILE)	1.19 (1.92)	.87 (1.39)	.86 (1.38)
FUEL CONSUMPTION AV CR L/100KM(MPG)	16.99 (13.85)	16.12 (14.59)	14.69 (16.02)
CALCULATED DISTANCE KM (MILES)	5.79 (3.60)	6.27 (3.90)	5.82 (3.62)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.43 (.70)
CO GRAMS/KM (GRAMS/MILE)	3.77 (6.06)
CO2 GRAMS/KM (GRAMS/MILE)	345.40 (587.93)
NOX GRAMS/KM (GRAMS/MILE)	.93 (1.50)
FUEL CONSUMPTION AV CR L/100KM (MPG)	15.91 (14.79)

TABLE D-25. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4443-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/15/79
TIME
DYNO NO. 5
CVS NO. 2
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-385-F
ODOMETER 6087

BAROMETER 744.73 MM HG(29.32 IN HG)
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)

RELATIVE HUMIDITY 31 PCT
ABSOLUTE HUMIDITY 6.3 GM/KG(44.3 GRAINS/LB)

NOX HUMIDITY C.F. .8740

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1676.4 (66.0)	1676.4 (66.0)	1676.4 (66.0)
BLOWER INLET P MM. H2O(IN. H2O)	1524.0 (60.0)	1524.0 (60.0)	1524.0 (60.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10346	17746	10340
CVS FLOW STD. CU. METRES(SCF)	60.5 (2135.1)	103.7 (3662.0)	60.4 (2133.5)
HC SAMPLE METER/RANGE/PPM	22.1/ 3/ 221	25.8/ 2/ 26	80.9/ 2/ 81
HC BCKGRD METER/RANGE/PPM	1.4/ 3/ 14	12.1/ 2/ 12	13.8/ 2/ 14
CO SAMPLE METER/RANGE/PPM	39.8/ 3/ 999	36.3/13/ 34	71.7/12/ 163
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	3.5/13/ 3	1.5/12/ 3
CO2 SAMPLE METER/RANGE/PCT	43.8/ 2/ 1.99	70.7/ 3/ 1.28	96.1/ 3/ 1.81
CO2 BCKGRD METER/RANGE/PCT	1.1/ 2/ .04	2.9/ 3/ .04	3.0/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	63.6/ 2/ 64	30.4/ 2/ 30	47.5/ 2/ 48
NOX BCKGRD METER/RANGE/PPM	.8/ 2/ 1	1.0/ 2/ 1	1.2/ 2/ 1
DILUTION FACTOR	6.53	10.43	7.32
HC CONCENTRATION PPM	209	15	69
CO CONCENTRATION PPM	901	30	153
CO2 CONCENTRATION PCT	1.91	1.24	1.77
NOX CONCENTRATION PPM	62.9	29.5	46.5
HC MASS GRAMS	7.29	.89	2.90
CO MASS GRAMS	63.90	3.63	10.77
CO2 MASS GRAMS	2110.8	2351.3	1954.4
NOX MASS GRAMS	6.36	5.11	4.69
HC GRAMS/KM (GRAMS/MILE)	1.25 (2.01)	.14 (.23)	.41 (.67)
CO GRAMS/KM (GRAMS/MILE)	10.89 (17.52)	.58 (.93)	1.85 (2.98)
CO2 GRAMS/KM (GRAMS/MILE)	362.5 (583.2)	375.5 (604.2)	336.2 (540.9)
NOX GRAMS/KM (GRAMS/MILE)	1.09 (1.76)	.82 (1.31)	.81 (1.30)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.37 (14.37)	16.08 (14.62)	14.53 (16.19)
CALCULATED DISTANCE KM (MILES)	5.82 (3.62)	6.26 (3.89)	5.81 (3.61)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.45 (.72)
CO GRAMS/KM (GRAMS/MILE)	3.07 (4.93)
CO2 GRAMS/KM (GRAMS/MILE)	362.01 (582.47)
NOX GRAMS/KM (GRAMS/MILE)	.87 (1.40)
FUEL CONSUMPTION BY CB L/100KM (MPG)	15.72 (14.97)

TABLE D-26. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/16/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE EM-386-F
ODOMETER 6112

BAROMETER 744.22 MM HG(29.30 IN HG)
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)

RELATIVE HUMIDITY 39 PCT
ABSOLUTE HUMIDITY 7.9 GM/KG(55.0 GRAINS/LB)

NOX HUMIDITY C.F. .9140

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10363	17796	10350
CVS FLOW STD. CU. METRES(SCF)	61.3 (2164.4)	105.2 (3716.6)	61.2 (2161.3)
HC SAMPLE METER/RANGE/PPM	24.4/ 3/ 244	25.4/ 2/ 25	75.0/ 2/ 75
HC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13	11.9/ 2/ 12	11.3/ 2/ 11
CO SAMPLE METER/RANGE/PPM	99.6/ 3/ 1212	95.8/13/ 94	90.1/12/ 216
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.6/13/ 1	.4/12/ 1
CO2 SAMPLE METER/RANGE/PCT	99.6/ 2/ 1.98	71.5/ 3/ 1.29	98.0/ 3/ 1.85
CO2 BCKGRD METER/RANGE/PCT	1.1/ 2/ .04	2.5/ 3/ .04	2.8/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	58.7/ 2/ 59	27.3/ 2/ 27	95.3/ 2/ 95
NOX BCKGRD METER/RANGE/PPM	.6/ 2/ 1	.7/ 2/ 1	.7/ 2/ 1
DILUTION FACTOR	6.31	10.30	7.15
HC CONCENTRATION PPM	233	15	65
CO CONCENTRATION PPM	1149	91	205
CO2 CONCENTRATION PCT	1.95	1.26	1.81
NOX CONCENTRATION PPM	58.2	26.7	99.7
HC MASS GRAMS	8.24	.89	2.30
CO MASS GRAMS	81.96	5.07	14.62
CO2 MASS GRAMS	2188.9	2928.6	2027.9
NOx MASS GRAMS	6.24	9.91	9.78
HC GRAMS/KM (GRAMS/MILE)	1.42 (2.29)	.14 (.23)	.40 (.64)
CO GRAMS/KM (GRAMS/MILE)	14.15 (22.77)	.81 (1.30)	2.53 (4.06)
CO2 GRAMS/KM (GRAMS/MILE)	377.9 (608.0)	387.9 (624.1)	350.3 (563.6)
NOX GRAMS/KM (GRAMS/MILE)	1.08 (1.73)	.78 (1.26)	.83 (1.33)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.27 (13.62)	16.63 (14.15)	15.17 (15.50)
CALCULATED DISTANCE KM (MILES)	5.79 (3.60)	6.26 (3.89)	5.79 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.48 (.77)
CO GRAMS/KM (GRAMS/MILE)	4.04 (6.49)
CO2 GRAMS/KM (GRAMS/MILE)	375.51 (604.20)
NOX GRAMS/KM (GRAMS/MILE)	.86 (1.38)
FUEL CONSUMPTION BY CB L/100KM (MPG)	14.36 (14.38)

TABLE D-27. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 15
VEHICLE MODEL 78 FORD MUSTANG
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/17/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1591 KG(3500 LBS)
ACTUAL ROAD LOAD 9.2 KW(12.3 HP)
GASOLINE
ODOMETER 6123

BAROMETER 742.70 MM HG(29.24 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 50 PCT
ABSOLUTE HUMIDITY 8.8 GM/KG(61.8 GRAINS/LB)

NOX HUMIDITY C.F. .9918

BAG RESULTS

	1	2	3
BAG NUMBER	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
DESCRIPTION	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER DIF P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET P MM. H2O(IN. H2O)	93.3 (110.0)	93.3 (110.0)	93.3 (110.0)
BLOWER INLET TEMP. DEG. C(DEG. F)			
BLOWER REVOLUTIONS	10366	17795	10351
CVS FLOW STD. CU. METRES(SCF)	61.2 (2163.0)	105.1 (3712.7)	61.1 (2159.3)
HC SAMPLE METER/RANGE/PPM	22.3/ 3/ 223	29.2/ 2/ 29	29.3/ 2/ 29
HC BCKGRD METER/RANGE/PPM	2.1/ 3/ 21	16.0/ 2/ 16	15.3/ 2/ 15
CO SAMPLE METER/RANGE/PPM	93.9/ 3/ 1057	53.7/13/ 51	90.7/12/ 218
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	2.2/13/ 2	.8/12/ 1
CO2 SAMPLE METER/RANGE/PCT	99.2/ 2/ 1.96	72.8/ 3/ 1.32	91.9/ 2/ 1.83
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	3.2/ 3/ .05	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	58.8/ 2/ 59	28.9/ 2/ 28	45.8/ 2/ 46
NOX BCKGRD METER/RANGE/PPM	1.7/ 2/ 2	1.5/ 2/ 2	1.5/ 2/ 2
DILUTION FACTOR	6.43	10.08	7.19
HC CONCENTRATION PPM	205	15	66
CO CONCENTRATION PPM	998	47	206
CO2 CONCENTRATION PCT	1.92	1.28	1.80
NOX CONCENTRATION PPM	57.9	27.0	44.5
HC MASS GRAMS	7.25	.90	2.33
CO MASS GRAMS	71.19	5.79	14.66
CO2 MASS GRAMS	2155.8	2458.7	2011.5
NOX MASS GRAMS	6.33	5.12	4.90
HC GRAMS/KM (GRAMS/MILE)	1.25 (2.01)	.14 (.23)	.40 (.64)
CO GRAMS/KM (GRAMS/MILE)	12.25 (19.70)	.92 (1.49)	2.52 (4.05)
CO2 GRAMS/KM (GRAMS/MILE)	370.8 (596.7)	392.6 (631.6)	345.5 (555.9)
NOX GRAMS/KM (GRAMS/MILE)	1.09 (1.75)	.82 (1.32)	.84 (1.35)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.82 (13.99)	16.84 (13.97)	14.97 (15.72)
CALCULATED DISTANCE KM (MILES)	5.81 (3.61)	6.26 (3.89)	5.82 (3.62)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.44 (.71)
CO GRAMS/KM (GRAMS/MILE)	3.71 (5.96)
CO2 GRAMS/KM (GRAMS/MILE)	375.15 (603.61)
NOX GRAMS/KM (GRAMS/MILE)	.88 (1.42)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.32 (14.41)

APPENDIX E

SAAB FTP RESULTS FOR REGULATED AND UNREGULATED
EMISSIONS WITH FIVE TEST FUELS

TABLE E-1. SUMMARY OF REGULATED EMISSIONS FROM 1978 SAAB

Test No.	Fuel	Date	FTP Emissions Rates, g/km			HC Evaporative Emissions, g			Consumption ℓ/100 km
			HC	CO	NO_x	DBL	HSL	Total	
21-1	EM-373-F	11-10-78	0.20	2.67	0.14	7.76	11.56	19.34*	11.76
21-2	EM-373-F	11-11-78	0.17	2.71	0.16	4.35	5.81	10.16*	12.00
21-3	EM-373-F	11-17-78	0.17	2.97	0.16	1.79	3.52	5.31	11.74
21-4	EM-373-F	11-20-78	0.17	3.01	0.09	3.61	2.48	6.09	11.68
	Average		0.18	2.84	0.14	2.70	3.00	5.70	11.80
22-1	EM-374-F	11-12-78	0.14	2.18	0.16	4.52	16.63	21.15*	11.57
22-2	EM-374-F	11-13-78	0.16	2.19	0.14	3.14	9.32	12.46*	11.48
22-3	EM-374-F	11-14-78	0.19	2.39	0.16	2.77	1.79	4.56	11.58
22-4	EM-374-F	11-21-78	0.16	2.36	0.17	3.24	6.58	9.82	11.91
	Average		0.16	2.28	0.16	3.01	4.19	7.19	11.64
23-1	EM-375-F	11-15-78	0.17	2.64	0.18	1.85	3.59	5.44	11.87
23-2	EM-375-F	11-16-78	0.22	2.46	0.17	1.84	2.35	4.19	11.96
	Average		0.20	2.55	0.18	1.85	2.97	4.82	11.92
24-1	EM-371-F	11-27-78	0.12	2.40	0.10	2.46	3.06	5.52	10.90
24-2	EM-371-F	11-28-78	0.13	2.47	0.13	1.59	0.90	2.49	11.41
24-3	EM-371-F	12-04-78	0.12	2.42	0.15	3.74	1.94	5.68	11.29
24-4	EM-371-F	12-05-78	0.14	2.41	0.11	2.81	2.82	5.63	11.10
	Average		0.13	2.43	0.12	2.65	2.18	4.83	11.18
25-1	EM-372-F	11-29-78	0.12	1.83	0.12	2.60	----	----	11.08
25-2	EM-372-F	11-30-78	0.12	1.92	0.12	2.07	2.39	4.46	11.39
25-3	EM-372-F	12-01-78	0.11	1.90	0.14	2.81	3.75	6.56	10.74
	Average		0.12	1.88	0.13	2.49	3.07	5.51	11.07

* sporadic sealing of fuel pressure valve

TABLE E-2. INDIVIDUAL HYDROCARBON EMISSIONS FROM 1978 SAAB

Test. No.	Fuel	Date	FTP Individual Hydrocarbon Emissions Rates, mg/km							
			Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toluene
21-1	EM-373-F	11-10-78	33.56	15.85	5.90	2.61	0.68	6.40	16.34	9.88
21-2	EM-373-F	11-11-78	34.30	15.16	6.15	2.49	1.30	6.59	15.04	9.76
21-3	EM-373-F	11-17-78	32.25	14.98	5.34	2.80	0.87	6.46	17.27	10.50
21-4	EM-373-F	11-20-78	32.06	15.47	4.97	2.55	1.74	6.21	12.12	9.38
	Average		33.04	15.37	5.59	2.61	1.15	6.42	15.19	9.88
22-1	EM-374-F	11-12-78	29.02	12.43	4.54	2.36	1.18	5.47	10.00	8.95
22-2	EM-374-F	11-13-78	30.14	13.80	4.72	2.36	0.50	5.65	12.06	9.82
22-3	EM-374-F	11-14-78	32.00	15.10	4.66	3.48	0.75	6.09	14.17	11.81
22-4	EM-374-F	11-21-78	30.20	15.47	4.47	2.55	0.68	6.03	11.31	6.77
	Average		30.34	14.20	4.60	2.68	0.78	5.81	11.89	9.34
23-1	EM-375-F	11-15-78	30.57	15.10	4.60	3.04	1.43	5.53	13.98	13.11
23-2	EM-375-F	11-15-78	30.70	17.90	5.28	3.36	1.37	6.52	14.60	11.81
	Average		30.64	16.50	4.94	3.20	1.40	6.03	14.29	12.46
24-1	EM-371-F	11-27-78	21.00	8.39	3.48	1.55	0.44	5.97	6.84	10.87
24-2	EM-371-F	11-28-78	20.69	9.57	3.54	1.99	0.31	6.77	7.58	12.30
24-3	EM-371-F	12-04-78	19.33	9.13	2.67	2.11	0.19	5.84	7.27	11.81
24-4	EM-371-F	12-05-78	20.63	10.75	3.04	1.93	0.31	7.83	8.51	13.86
	Average		20.41	9.46	3.18	1.90	0.31	6.60	7.55	12.21
25-1	EM-372-F	11-29-78	15.91	8.26	2.98	1.74	0.62	5.90	6.65	10.25
25-2	EM-372-F	11-30-78	17.65	7.71	2.49	2.11	0.81	4.91	6.03	8.89
25-3	EM-372-F	12-01-78	15.66	7.77	2.73	1.62	0.37	5.53	6.40	11.18
	Average		16.41	7.91	2.73	1.82	0.60	5.45	6.36	10.11

TABLE E-3. ALDEHYDE EMISSIONS FROM 1978 SAAB

Test No.	Fuel	Date	FTP Aldehydes Emissions Rates, mg/km								
			Form-	Acet-	Acetone*	Isobutyr	Methylethyl Ketone	Croton-	Hexan-	Benzene	Total
21-1	EM-373-F	11-10-78	0.44	0.19	0.12	0	0.19	----	0.25	0.12	1.31
21-2	EM-373-F	11-11-78	0.31	0.31	0	0	0	----	0.19	0.99	1.80
21-3	EM-373-F	11-17-78	0.06	0	0	0	0	----	0.12	0	0.18
21-4	EM-373-F	11-20-78	0.12	0.25	0	0	0.12	----	0.12	0	0.61
	Average		0.23	0.19	0.03	0	0.08	----	0.17	0.28	0.98
22-1	EM-374-F	11-12-78	0.19	0	0.06	0	0.12	----	0.12	0	0.49
22-2	EM-374-F	11-31-78	0.06	0.06	0.19	0	0	----	0	0	0.31
22-3	EM-374-F	11-14-78	0.25	0.19	0.31	0	0.06	----	0.06	0.31	1.18
22-4	EM-374-F	11-21-78	0.19	0.06	0	0	0.06	----	0.12	0	0.43
	Average		0.17	0.08	0.14	0	0.06	----	0.08	0.08	0.60
23-1	EM-375-F	11-15-78	0.50	0.08	0.06	0	0.06	----	0.12	0	0.82
23-2	EM-375-F	11-16-78	0.19	0	0	0	0.06	----	0.06	0	0.31
	Average		0.35	0.04	0.03	0	0.06	----	0.09	0	0.57
24-1	EM-371-F	11-27-78	----	----	----	-	----	----	----	----	----
24-2	EM-371-F	11-28-78	----	----	----	-	----	----	----	----	----
24-3	EM-371-F	12-04-78	0.19	0.31	0.12	0	0.19	----	0.25	0.81	1.87
24-4	EM-371-F	12-05-78	0.19	0.06	0.06	0	0.13	----	0.19	0	0.62
	Average		0.19	0.19	0.09	0	0.16	----	0.22	0.41	1.25
25-1	EM-372-F	11-29-78	0	0.19	9	0	0.12	----	0.19	0.25	0.75
25-2	EM-372-F	11-30-78	0.37	0.31	0.12	0	0.19	----	0.25	0	1.24
25-3	EM-372-F	12-01-78	0.25	0.19	0	0	0.06	----	0.12	0.06	0.68
	Average		0.21	0.23	0.04	0	0.12	----	0.19	0.10	0.89

* Includes acrolein and propanol

TABLE E-4. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/10/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-373-F
ODOMETER 702

BAROMETER 738.89 MM HG(29.09 IN HG)
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)

RELATIVE HUMIDITY 47 PCT
ABSOLUTE HUMIDITY 10.2 GM/KG(71.4 GRAINS/LB)

NOX HUMIDITY C.F. .9835

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1569.7 (61.8)	1569.7 (61.8)	1569.7 (61.8)
BLOWER INLET P MM. H2O(IN. H2O)	1414.8 (55.7)	1414.8 (55.7)	1414.8 (55.7)
BLOWER INLET TEMP. DEG. C(DEG. F)	38.9 (102.0)	38.9 (102.0)	38.9 (102.0)
BLOWER REVOLUTIONS	10374	17801	10354
CVS FLOW STD. CU. METRES(SCF)	62.1 (2191.8)	106.5 (3761.4)	61.9 (2187.4)
HC SAMPLE METER/RANGE/PPM	10.9/ 3/ 109	18.5/ 2/ 18	27.9/ 2/ 28
HC BCKGRD METER/RANGE/PPM	1.2/ 3/ 12	11.8/ 2/ 12	11.1/ 2/ 11
CO SAMPLE METER/RANGE/PPM	91.3/11/ 456	83.6/13/ 83	88.1/12/ 209
CO BCKGRD METER/RANGE/PPM	.5/11/ 2	1.6/13/ 2	.4/12/ 1
CO2 SAMPLE METER/RANGE/PCT	83.4/ 3/ 1.54	50.6/ 3/ .88	74.2/ 3/ 1.35
CO2 BCKGRD METER/RANGE/PCT	2.8/ 3/ .04	3.1/ 3/ .05	3.3/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	14.4/ 2/ 14	2.6/ 2/ 3	8.8/ 2/ 9
NOX BCKGRD METER/RANGE/PPM	.8/ 2/ 1	.7/ 2/ 1	.5/ 2/ 1
DILUTION FACTOR	8.40	15.08	9.76
HC CONCENTRATION PPM	98	7	18
CO CONCENTRATION PPM	435	79	200
CO2 CONCENTRATION PCT	1.50	.83	1.30
NOX CONCENTRATION PPM	13.7	1.9	8.4
HC MASS GRAMS	3.52	.46	.64
CO MASS GRAMS	31.41	9.83	14.44
CO2 MASS GRAMS	1707.6	1627.3	1479.7
NOX MASS GRAMS	1.60	.29	.97
HC GRAMS/KM (GRAMS/MILE)	.62 (.99)	.08 (.12)	.11 (.18)
CO GRAMS/KM (GRAMS/MILE)	5.49 (8.83)	1.61 (2.58)	2.53 (4.07)
CO2 GRAMS/KM (GRAMS/MILE)	298.4 (480.2)	265.8 (427.7)	259.1 (416.9)
NOX GRAMS/KM (GRAMS/MILE)	.28 (.45)	.06 (.10)	.17 (.27)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.19 (17.84)	11.46 (20.52)	11.24 (20.92)
CALCULATED DISTANCE KM (MILES)	5.72 (3.56)	6.12 (3.80)	5.71 (3.55)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.20 (.32)
CO GRAMS/KM (GRAMS/MILE)	2.67 (4.29)
CO2 GRAMS/KM (GRAMS/MILE)	270.74 (435.62)
NOX GRAMS/KM (GRAMS/MILE)	.14 (.22)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.76 (20.00)

TABLE E-5. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/11/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-373-F
ODOMETER 720

BAROMETER 744.98 MM HG(29.33 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 57 PCT
ABSOLUTE HUMIDITY 10.1 GM/KG(71.0 GRAINS/LB)

NOX HUMIDITY C.F. .9814

BAG RESULTS	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER DIF P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET P MM. H2O(IN. H2O)	41.7 (107.0)	41.7 (107.0)	41.7 (107.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	10366	17817	10373
BLOWER REVOLUTIONS	61.6 (2174.7)	105.9 (3739.2)	61.6 (2176.6)
CVS FLOW STD. CU. METRES(SCF)			
HC SAMPLE METER/RANGE/PPM	86.5/ 2/ 86	20.5/ 2/ 20	31.7/ 2/ 32
HC BCKGRD METER/RANGE/PPM	14.0/ 2/ 14	12.8/ 2/ 13	11.7/ 2/ 12
CO SAMPLE METER/RANGE/PPM	91.3/11/ 456	87.2/13/ 88	93.1/12/ 227
CO BCKGRD METER/RANGE/PPM	1.0/11/ 3	2.0/13/ 2	.7/12/ 1
CO2 SAMPLE METER/RANGE/PCT	86.2/ 3/ 1.60	52.2/ 3/ .91	76.3/ 3/ 1.39
CO2 BCKGRD METER/RANGE/PCT	3.1/ 3/ .05	3.5/ 3/ .05	3.0/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	19.6/ 2/ 20	3.0/ 2/ 3	9.3/ 2/ 9
NOX BCKGRD METER/RANGE/PPM	1.5/ 2/ 2	1.2/ 2/ 1	1.1/ 2/ 1
DILUTION FACTOR	8.12	14.56	9.45
HC CONCENTRATION PPM	74	9	21
CO CONCENTRATION PPM	431	83	216
CO2 CONCENTRATION PCT	1.56	.86	1.35
NOX CONCENTRATION PPM	18.3	1.9	8.3
HC MASS GRAMS	2.64	.52	.75
CO MASS GRAMS	30.92	10.18	15.48
CO2 MASS GRAMS	1755.8	1666.8	1526.0
NOX MASS GRAMS	2.11	.37	.96
HC GRAMS/KM (GRAMS/MILE)	.96 (.74)	.08 (.14)	.13 (.21)
CO GRAMS/KM (GRAMS/MILE)	5.38 (8.66)	1.65 (2.66)	2.69 (4.33)
CO2 GRAMS/KM (GRAMS/MILE)	305.4 (491.4)	270.4 (435.0)	265.4 (427.1)
NOX GRAMS/KM (GRAMS/MILE)	.37 (.59)	.06 (.10)	.17 (.27)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.46 (17.48)	11.66 (20.17)	11.53 (20.41)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.16 (3.83)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.18 (.28)
CO GRAMS/KM (GRAMS/MILE)	2.71 (4.36)
CO2 GRAMS/KM (GRAMS/MILE)	276.30 (444.56)
NOX GRAMS/KM (GRAMS/MILE)	.15 (.25)
FUEL CONSUMPTION BY CB L/100KM (MPG)	12.00 (19.61)

TABLE E-6. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. #3 RUN
DATE 11/17/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-373-F
ODOMETER 859

BAROMETER 746.25 MM HG(29.38 IN HG)
DRY BULB TEMP. 20.6 DEG C(69.0 DEG F)

RELATIVE HUMIDITY 40 PCT
ABSOLUTE HUMIDITY 6.0 GM/KG(42.3 GRAINS/LB)

NOX HUMIDITY C.F. .8668

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10372	17806	10358
C.V.S. FLOW STD. CU. METRES(SCF)	61.2 (2160.5)	105.0 (3709.0)	61.1 (2157.2)
HC SAMPLE METER/RANGE/PPM	10.5/ 3/ 105	22.6/ 2/ 23	33.3/ 2/ 33
HC BCKGRD METER/RANGE/PPM	2.2/ 3/ 22	18.2/ 2/ 18	13.9/ 2/ 14
CO SAMPLE METER/RANGE/PPM	25.5/ 3/ 591	75.3/13/ 74	62.3/11/ 253
CO BCKGRD METER/RANGE/PPM	.3/ 3/ 7	1.9/13/ 2	.5/11/ 2
CO2 SAMPLE METER/RANGE/PCT	87.0/ 3/ 1.62	51.5/ 3/ .90	74.4/ 3/ 1.35
CO2 BCKGRD METER/RANGE/PCT	3.2/ 3/ .05	3.0/ 3/ .05	3.7/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	19.7/ 2/ 20	4.9/ 2/ 5	12.2/ 2/ 12
NOX BCKGRD METER/RANGE/PPM	2.1/ 2/ 2	2.0/ 2/ 2	2.4/ 2/ 2
DILUTION FACTOR	7.96	14.80	9.70
HC CONCENTRATION PPM	86	6	21
CO CONCENTRATION PPM	560	70	242
CO2 CONCENTRATION PCT	1.57	.85	1.30
NOX CONCENTRATION PPM	17.9	3.0	10.0
HC MASS GRAMS	3.03	.34	.73
CO MASS GRAMS	39.86	8.58	17.19
CO2 MASS GRAMS	1761.6	1641.0	1457.7
NOX MASS GRAMS	1.81	.53	1.02
HC GRAMS/KM (GRAMS/MILE)	.52 (.84)	.06 (.09)	.13 (.20)
CO GRAMS/KM (GRAMS/MILE)	6.90 (11.10)	1.39 (2.23)	2.98 (4.79)
CO2 GRAMS/KM (GRAMS/MILE)	304.9 (490.6)	265.1 (426.5)	252.6 (406.5)
NOX GRAMS/KM (GRAMS/MILE)	.31 (.50)	.09 (.14)	.18 (.28)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.55 (17.36)	11.42 (20.61)	11.00 (21.39)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.19 (3.85)	5.77 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.17 (.28)
CO GRAMS/KM (GRAMS/MILE)	2.97 (4.78)
CO2 GRAMS/KM (GRAMS/MILE)	269.93 (434.32)
NOX GRAMS/KM (GRAMS/MILE)	.16 (.25)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.74 (20.03)

TABLE E-7. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 4.9 L(302 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 11/20/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-373-F
ODOMETER 886

BAROMETER 748.54 MM HG(29.47 IN HG)
DRY BULB TEMP. 18.9 DEG C(66.0 DEG F)

RELATIVE HUMIDITY 53 PCT
ABSOLUTE HUMIDITY 7.3 GM/KG(51.1 GRAINS/LB)

NOX HUMIDITY C.F. .8992

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10371	17796	10367
CVS FLOW STD. CU. METRES(SCF)	61.6 (2175.4)	105.7 (3733.1)	61.6 (2174.6)
HC SAMPLE METER/RANGE/PPM	86.9/ 2/ 87	15.9/ 2/ 16	33.9/ 2/ 33
HC BCKGRD METER/RANGE/PPM	11.6/ 2/ 12	10.5/ 2/ 10	9.7/ 2/ 10
CO SAMPLE METER/RANGE/PPM	29.9/ 3/ 577	78.6/13/ 78	62.6/11/ 255
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	1.2/13/ 1	.2/11/ 1
CO2 SAMPLE METER/RANGE/PCT	89.9/ 3/ 1.56	51.8/ 3/ .90	72.7/ 3/ 1.32
CO2 BCKGRD METER/RANGE/PCT	3.5/ 3/ .05	3.5/ 3/ .05	3.9/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	9.6/ 2/ 10	1.0/ 2/ 1	7.1/ 2/ 7
NOX BCKGRD METER/RANGE/PPM	.1/ 2/ 0	.1/ 2/ 0	.1/ 2/ 0
DILUTION FACTOR	8.25	14.71	9.95
HC CONCENTRATION PPM	77	6	25
CO CONCENTRATION PPM	596	74	243
CO2 CONCENTRATION PCT	1.51	.85	1.27
NOX CONCENTRATION PPM	9.5	.9	7.0
HC MASS GRAMS	2.72	.37	.88
CO MASS GRAMS	39.14	9.11	17.44
CO2 MASS GRAMS	1707.8	1649.0	1934.7
NOX MASS GRAMS	1.01	.16	.74
HC GRAMS/KM (GRAMS/MILE)	.47 (.76)	.06 (.10)	.15 (.25)
CO GRAMS/KM (GRAMS/MILE)	6.81 (10.96)	1.47 (2.37)	3.09 (4.89)
CO2 GRAMS/KM (GRAMS/MILE)	297.3 (478.3)	266.9 (428.7)	250.0 (402.3)
NOX GRAMS/KM (GRAMS/MILE)	.18 (.28)	.03 (.04)	.13 (.21)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.21 (17.81)	11.98 (20.49)	10.90 (21.59)
CALCULATED DISTANCE KM (MILES)	5.74 (3.57)	6.19 (3.85)	5.74 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.17 (.28)
CO GRAMS/KM (GRAMS/MILE)	3.01 (4.84)
CO2 GRAMS/KM (GRAMS/MILE)	268.31 (431.70)
NOX GRAMS/KM (GRAMS/MILE)	.09 (.14)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.68 (20.15)

TABLE E-8. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/12/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.9 KW(11.3 HP)
GASOLINE EM-379-F
ODOMETER 797

BAROMETER 745.74 MM HG(29.36 IN HG)
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

RELATIVE HUMIDITY 65 PCT
ABSOLUTE HUMIDITY 11.1 GM/KG(77.4 GRAINS/LB)

NOX HUMIDITY C.F. 1.0115

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1579.8 (62.0)	1579.8 (62.0)	1579.8 (62.0)
BLOWER INLET P MM. H2O(IN. H2O)	1498.6 (59.0)	1498.6 (59.0)	1498.6 (59.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	40.6 (105.0)	40.6 (105.0)	40.6 (105.0)
BLOWER REVOLUTIONS	10351	17805	10392
CVS FLOW STD. CU. METRES(SCF)	61.7 (2178.9)	106.1 (3747.1)	61.6 (2176.3)
HC SAMPLE METER/RANGE/PPM	82.9/ 2/ 82	18.7/ 2/ 19	29.7/ 2/ 30
HC BCKGRD METER/RANGE/PPM	15.6/ 2/ 16	14.1/ 2/ 14	14.0/ 2/ 14
CO SAMPLE METER/RANGE/PPM	85.0/11/ 409	66.8/13/ 65	75.0/12/ 171
CO BCKGRD METER/RANGE/PPM	.9/11/ 3	1.1/13/ 1	.5/12/ 1
CO2 SAMPLE METER/RANGE/PCT	83.9/ 3/ 1.55	51.6/ 3/ .90	73.0/ 3/ 1.33
CO2 BCKGRD METER/RANGE/PCT	3.9/ 3/ .06	3.9/ 3/ .06	3.7/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	15.2/ 2/ 15	2.5/ 2/ 3	11.2/ 2/ 11
NOX BCKGRD METER/RANGE/PPM	1.0/ 2/ 1	.6/ 2/ 1	.6/ 2/ 1
DILUTION FACTOR	8.39	14.79	9.96
HC CONCENTRATION PPM	69	6	17
CO CONCENTRATION PPM	381	61	162
CO2 CONCENTRATION PCT	1.50	.89	1.27
NOX CONCENTRATION PPM	14.3	1.9	10.7
HC MASS GRAMS	2.44	.39	.61
CO MASS GRAMS	27.37	7.59	11.66
CO2 MASS GRAMS	1692.0	1636.9	1438.0
NOX MASS GRAMS	1.71	.40	1.27
HC GRAMS/KM (GRAMS/MILE)	.42 (.68)	.06 (.09)	.11 (.17)
CO GRAMS/KM (GRAMS/MILE)	4.75 (7.64)	1.23 (1.98)	2.03 (3.27)
CO2 GRAMS/KM (GRAMS/MILE)	293.5 (472.2)	265.2 (426.7)	250.7 (403.3)
NOX GRAMS/KM (GRAMS/MILE)	.30 (.48)	.06 (.10)	.22 (.36)
FUEL CONSUMPTION BY CB L/100KM(MPG)	12.90 (18.23)	11.91 (20.62)	10.85 (21.68)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.17 (3.83)	5.74 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.15 (.23)
CO GRAMS/KM (GRAMS/MILE)	2.18 (3.51)
CO2 GRAMS/KM (GRAMS/MILE)	267.09 (429.75)
NOX GRAMS/KM (GRAMS/MILE)	.16 (.25)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.57 (20.34)

TABLE E-9. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN 4
DATE 11/13/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-374-F
ODOMETER 767

BAROMETER 740.16 MM HG(29.14 IN HG)
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

RELATIVE HUMIDITY 53 PCT
ABSOLUTE HUMIDITY 9.1 GM/KG(63.8 GRAINS/LB)

NOX HUMIDITY C.F. .9500

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER	1574.8 (62.0)	1574.8 (62.0)	1574.8 (62.0)
DESCRIPTION	1498.6 (59.0)	1498.6 (59.0)	1498.6 (59.0)
BLOWER DIF P MM. H2O(IN. H2O)	42.2 (108.0)	42.2 (108.0)	42.2 (108.0)
BLOWER INLET P MM. H2O(IN. H2O)	10345	17805	10345
BLOWER INLET TEMP. DEG. C(DEG. F)	60.7 (2145.5)	104.6 (3693.4)	60.7 (2145.3)
BLOWER REVOLUTIONS			
CVS FLOW STD. CU. METRES(SCF)			
HC SAMPLE METER/RANGE/PPM	92.5/ 2/ 93	18.5/ 2/ 18	29.9/ 2/ 30
HC BCKGRD METER/RANGE/PPM	14.4/ 2/ 14	13.5/ 2/ 13	12.2/ 2/ 12
CO SAMPLE METER/RANGE/PPM	89.7/11/ 426	65.4/13/ 63	74.9/12/ 171
CO BCKGRD METER/RANGE/PPM	.7/11/ 2	1.9/13/ 2	.4/12/ 1
CO2 SAMPLE METER/RANGE/PCT	85.3/ 3/ 1.58	51.1/ 3/ .89	74.4/ 3/ 1.35
CO2 BCKGRD METER/RANGE/PCT	3.0/ 3/ .05	3.9/ 3/ .06	3.5/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	17.0/ 2/ 17	2.5/ 2/ 3	10.2/ 2/ 10
NOX BCKGRD METER/RANGE/PPM	1.0/ 2/ 1	.7/ 2/ 1	1.3/ 2/ 1
DILUTION FACTOR	8.22	14.95	9.76
HC CONCENTRATION PPM	80	6	14
CO CONCENTRATION PPM	404	60	163
CO2 CONCENTRATION PCT	1.54	.83	1.31
NOX CONCENTRATION PPM	16.1	1.8	9.0
HC MASS GRAMS	2.80	.36	.66
CO MASS GRAMS	28.55	7.25	11.52
CO2 MASS GRAMS	1712.7	1594.3	1452.7
NOX MASS GRAMS	1.78	.35	1.00
HC GRAMS/KM (GRAMS/MILE)	.99 (.78)	.06 (.09)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	4.97 (8.00)	1.17 (1.89)	2.00 (3.22)
CO2 GRAMS/KM (GRAMS/MILE)	298.4 (480.1)	258.3 (415.7)	252.1 (405.6)
NOX GRAMS/KM (GRAMS/MILE)	.31 (.50)	.06 (.09)	.17 (.28)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.13 (17.91)	11.11 (21.17)	10.91 (21.56)
CALCULATED DISTANCE KM (MILES)	5.74 (3.57)	6.17 (3.84)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.16 (.26)
CO GRAMS/KM (GRAMS/MILE)	2.19 (3.52)
CO2 GRAMS/KM (GRAMS/MILE)	264.91 (426.25)
NOX GRAMS/KM (GRAMS/MILE)	.14 (.23)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.48 (20.50)

TABLE E-10. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4413-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 11/14/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-375-F
ODOMETER 786

BAROMETER 740.41 MM HG(29.15 IN HG)
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)

RELATIVE HUMIDITY 56 PCT
ABSOLUTE HUMIDITY 11.4 GM/KG(79.7 GRAINS/LB)

NOX HUMIDITY C.F. 1.0226

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10352	17813	10354
CVS FLOW STD. CU. METRES(SCF)	60.6 (2141.2)	104.3 (3684.5)	60.6 (2141.5)
HC SAMPLE METER/RANGE/PPM	10.8/ 3/ 108	22.0/ 2/ 22	36.8/ 2/ 37
HC BCKGRD METER/RANGE/PPM	1.7/ 3/ 17	16.9/ 2/ 17	14.9/ 2/ 15
CO SAMPLE METER/RANGE/PPM	90.3/11/ 448	68.2/13/ 66	87.9/12/ 209
CO BCKGRD METER/RANGE/PPM	.6/11/ 2	1.1/13/ 1	.2/12/ 0
CO2 SAMPLE METER/RANGE/PCT	85.6/ 3/ 1.59	51.3/ 3/ .89	74.4/ 3/ 1.35
CO2 BCKGRD METER/RANGE/PCT	2.8/ 3/ .04	3.1/ 3/ .05	3.4/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	16.5/ 2/ 16	2.7/ 2/ 3	10.7/ 2/ 11
NOX BCKGRD METER/RANGE/PPM	1.0/ 2/ 1	.9/ 2/ 1	1.0/ 2/ 1
DILUTION FACTOR	8.17	14.87	9.73
HC CONCENTRATION PPM	93	6	23
CO CONCENTRATION PPM	424	63	199
CO2 CONCENTRATION PCT	1.55	.85	1.31
NOX CONCENTRATION PPM	15.6	1.9	9.8
HC MASS GRAMS	3.25	.38	.82
CO MASS GRAMS	29.96	7.66	14.07
CO2 MASS GRAMS	1719.3	1620.0	1451.7
NOX MASS GRAMS	1.85	.38	1.16
...AMS/KM (GRAMS/MILE)	.57 (.91)	.06 (.10)	.14 (.23)
CO GRAMS/KM (GRAMS/MILE)	5.23 (8.41)	1.24 (1.99)	2.44 (3.92)
CO2 GRAMS/KM (GRAMS/MILE)	300.1 (482.9)	262.0 (421.5)	251.3 (404.3)
NOX GRAMS/KM (GRAMS/MILE)	.32 (.52)	.06 (.10)	.20 (.32)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.24 (17.77)	11.27 (20.87)	10.91 (21.57)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.18 (3.84)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.19 (.30)
CO GRAMS/KM (GRAMS/MILE)	2.39 (3.85)
CO2 GRAMS/KM (GRAMS/MILE)	266.91 (429.46)
NOX GRAMS/KM (GRAMS/MILE)	.15 (.25)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.58 (20.32)

TABLE E-11. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL -0 SAAB
ENGINE 0.0 L(-0 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 11/21/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-374-F
ODOMETER 414

BAROMETER 742.70 MM HG(29.24 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 40 PCT
ABSOLUTE HUMIDITY 7.3 GM/KG(51.2 GRAINS/LB)

NOX HUMIDITY C.F. .8993

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1651.0 (65.0)	1651.0 (65.0)	1651.0 (65.0)
BLOWER INLET P MM. H2O(IN. H2O)	1498.6 (59.0)	1498.6 (59.0)	1498.6 (59.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10369	17800	10368
CVS FLOW STD. CU. METRES(SCF)	60.5 (2136.4)	103.8 (3667.4)	60.5 (2135.9)
HC SAMPLE METER/RANGE/PPM	10.0/ 3/ 100	16.7/ 2/ 17	31.4/ 2/ 31
HC BCKGRD METER/RANGE/PPM	1.8/ 3/ 18	13.5/ 2/ 13	11.8/ 2/ 12
CO SAMPLE METER/RANGE/PPM	91.9/11/ 462	62.2/13/ 60	91.9/12/ 221
CO BCKGRD METER/RANGE/PPM	.9/11/ 3	.9/13/ 1	.3/12/ 1
CO2 SAMPLE METER/RANGE/PCT	87.9/ 3/ 1.63	52.8/ 3/ .92	76.9/ 3/ 1.40
CO2 BCKGRD METER/RANGE/PCT	3.2/ 3/ .05	3.2/ 3/ .05	3.5/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	20.9/ 2/ 20	4.0/ 2/ 4	13.0/ 2/ 13
NOX BCKGRD METER/RANGE/PPM	1.7/ 2/ 2	1.5/ 2/ 2	1.2/ 2/ 1
DILUTION FACTOR	7.94	14.43	9.44
HC CONCENTRATION PPM	84	4	21
CO CONCENTRATION PPM	439	57	212
CO2 CONCENTRATION PCT	1.59	.88	1.35
NOX CONCENTRATION PPM	18.9	2.6	11.9
HC MASS GRAMS	2.94	.25	.73
CO MASS GRAMS	30.91	6.94	14.90
CO2 MASS GRAMS	1762.9	1665.3	1492.2
NOX MASS GRAMS	1.97	.47	1.24
HC GRAMS/KM (GRAMS/MILE)	.51 (.82)	.04 (.06)	.13 (.20)
CO GRAMS/KM (GRAMS/MILE)	5.36 (8.62)	1.12 (1.81)	2.60 (4.18)
CO2 GRAMS/KM (GRAMS/MILE)	305.5 (491.6)	269.8 (434.1)	260.4 (419.0)
NOX GRAMS/KM (GRAMS/MILE)	.34 (.55)	.08 (.12)	.22 (.35)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.47 (17.47)	11.60 (20.29)	11.31 (20.81)
CALCULATED DISTANCE KM (MILES)	5.77 (3.59)	6.17 (3.84)	5.73 (3.56)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.16 (.26)
CO GRAMS/KM (GRAMS/MILE)	2.41 (3.88)
CO2 GRAMS/KM (GRAMS/MILE)	274.64 (441.89)
NOX GRAMS/KM (GRAMS/MILE)	.17 (.27)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.91 (19.76)

TABLE E-12. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/15/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LMS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-375-F
ODOMETER 813

BAROMETER 740.41 MM HG(29.15 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 61 PCT
ABSOLUTE HUMIDITY 10.9 GM/KG(76.4 GRAINS/LB)

NOX HUMIDITY C.F. 1.0066

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.9 (111.0)	43.9 (111.0)	43.9 (111.0)
BLOWER REVOLUTIONS	10359	17807	10369
CVS FLOW STD. CU. METRES(SCF)	60.6 (2139.9)	104.1 (3677.9)	60.6 (2141.1)
HC SAMPLE METER/RANGE/PPM	10.9/ 3/ 109	17.5/ 2/ 18	28.5/ 2/ 28
HC BCKGRD METER/RANGE/PPM	1.5/ 3/ 15	12.7/ 2/ 13	10.6/ 2/ 11
CO SAMPLE METER/RANGE/PPM	93.9/11/ 475	76.9/13/ 75	95.7/12/ 237
CO BCKGRD METER/RANGE/PPM	.5/11/ 2	.5/13/ 0	.3/12/ 1
CO2 SAMPLE METER/RANGE/PCT	87.1/ 3/ 1.62	52.8/ 3/ .92	79.0/ 3/ 1.35
CO2 BCKGRD METER/RANGE/PCT	3.0/ 3/ .05	2.8/ 3/ .04	3.9/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	16.6/ 2/ 17	9.9/ 2/ 9	12.0/ 2/ 12
NOX BCKGRD METER/RANGE/PPM	1.7/ 2/ 2	1.2/ 2/ 1	1.1/ 2/ 1
DILUTION FACTOR	8.01	14.90	9.77
HC CONCENTRATION PPM	91	6	19
CO CONCENTRATION PPM	450	72	226
CO2 CONCENTRATION PCT	1.58	.88	1.30
NOX CONCENTRATION PPM	15.1	3.3	11.0
HC MASS GRAMS	3.17	.39	.66
CO MASS GRAMS	31.72	8.74	15.99
CO2 MASS GRAMS	1749.7	1680.8	1492.3
NOX MASS GRAMS	1.74	.66	1.29
HC GRAMS/KM (GRAMS/MILE)	.55 (.89)	.06 (.09)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	5.52 (8.87)	1.42 (2.28)	2.77 (4.46)
CO2 GRAMS/KM (GRAMS/MILE)	304.2 (489.5)	273.0 (439.3)	251.0 (403.8)
NOX GRAMS/KM (GRAMS/MILE)	.31 (.49)	.11 (.17)	.22 (.36)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.43 (17.52)	11.76 (20.01)	10.91 (21.56)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.16 (3.83)	5.75 (3.57)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.18 (.28)
CO GRAMS/KM (GRAMS/MILE)	2.69 (4.25)
CO2 GRAMS/KM (GRAMS/MILE)	273.93 (439.95)
NOX GRAMS/KM (GRAMS/MILE)	.18 (.29)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.87 (19.82)

TABLE E-13. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4443-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/16/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-375-F
ODOMETER 832

BAROMETER 741.68 MM HG(29.20 IN HG)
DRY BULB TEMP. 21.7 DEG C(71.0 DEG F)

RELATIVE HUMIDITY 38 PCT
ABSOLUTE HUMIDITY 6.2 GM/KG(43.5 GRAINS/LB)

NOX HUMIDITY C.F. .8710

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1468.1 (57.8)	1468.1 (57.8)	1468.1 (57.8)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	44.4 (112.0)	44.4 (112.0)
BLOWER REVOLUTIONS	10367	17790	10358
CVS FLOW STD. CU. METRES(SCF)	60.7 (2143.7)	104.1 (3678.6)	60.6 (2141.7)
HC SAMPLE METER/RANGE/PPM	15.2/ 3/ 152	17.5/ 2/ 18	25.6/ 2/ 26
HC BCKGRD METER/RANGE/PPM	1.5/ 3/ 15	15.1/ 2/ 15	10.4/ 2/ 10
CO SAMPLE METER/RANGE/PPM	87.0/11/ 420	76.6/13/ 76	89.9/12/ 216
CO BCKGRD METER/RANGE/PPM	.6/11/ 2	.6/13/ 1	.3/12/ 1
CO2 SAMPLE METER/RANGE/PCT	87.1/ 3/ 1.62	53.0/ 3/ .93	77.1/ 3/ 1.41
CO2 BCKGRD METER/RANGE/PCT	3.8/ 3/ .06	3.4/ 3/ .05	3.9/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	18.7/ 2/ 19	3.4/ 2/ 3	14.1/ 2/ 14
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	.7/ 2/ 1	.6/ 2/ 1
DILUTION FACTOR	8.01	14.34	9.35
HC CONCENTRATION PPM	139	3	16
CO CONCENTRATION PPM	400	73	207
CO2 CONCENTRATION PCT	1.57	.88	1.36
NOX CONCENTRATION PPM	17.6	2.7	13.6
HC MASS GRAMS	4.86	.21	.57
CO MASS GRAMS	28.29	8.82	14.59
CO2 MASS GRAMS	1741.2	1672.3	1506.1
NOX MASS GRAMS	1.78	.48	1.37
HC GRAMS/KM (GRAMS/MILE)	.85 (1.37)	.03 (.05)	.10 (.16)
CO GRAMS/KM (GRAMS/MILE)	4.94 (7.95)	1.43 (2.31)	2.54 (4.08)
CO2 GRAMS/KM (GRAMS/MILE)	309.0 (489.1)	271.7 (437.2)	261.8 (421.2)
NOX GRAMS/KM (GRAMS/MILE)	.31 (.50)	.08 (.12)	.24 (.38)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.42 (17.53)	11.70 (20.11)	11.36 (20.71)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.16 (3.83)	5.75 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.22 (.36)
CO GRAMS/KM (GRAMS/MILE)	2.96 (3.96)
CO2 GRAMS/KM (GRAMS/MILE)	275.66 (443.53)
NOX GRAMS/KM (GRAMS/MILE)	.17 (.27)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.96 (19.67)

TABLE E-14. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/27/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-371-F
ODOMETER 942

BAROMETER 741.68 MM HG(29.20 IN HG)
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

RELATIVE HUMIDITY 32 PCT
ABSOLUTE HUMIDITY 5.4 GM/KG(37.8 GRAINS/LB)

NOX HUMIDITY C.F. .8510

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H20(IN. H20)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H20(IN. H20)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10362	17797	10385
CVS FLOW STD. CU. METRES(SCF)	61.1 (2158.5)	105.0 (3707.2)	61.3 (2163.8)
HC SAMPLE METER/RANGE/PPM	75.0/ 2/ 75	13.5/ 2/ 13	25.2/ 2/ 25
HC BCKGRD METER/RANGE/PPM	12.5/ 2/ 13	11.0/ 2/ 11	10.5/ 2/ 10
CO SAMPLE METER/RANGE/PPM	23.8/ 3/ 550	49.4/13/ 47	77.3/12/ 177
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.1/13/ 0	.1/12/ 0
CO2 SAMPLE METER/RANGE/PCT	84.4/ 3/ 1.56	47.3/ 3/ .82	70.6/ 3/ 1.28
CO2 BCKGRD METER/RANGE/PCT	3.0/ 3/ .05	3.0/ 3/ .05	3.5/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	14.2/ 2/ 14	3.1/ 2/ 3	8.0/ 2/ 8
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.8/ 2/ 2	1.5/ 2/ 2
DILUTION FACTOR	8.26	16.32	10.34
HC CONCENTRATION PPM	64	3	16
CO CONCENTRATION PPM	526	46	171
CO2 CONCENTRATION PCT	1.52	.77	1.23
NOX CONCENTRATION PPM	13.1	1.4	6.6
HC MASS GRAMS	2.26	.19	.56
CO MASS GRAMS	37.45	5.59	12.20
CO2 MASS GRAMS	1702.0	1484.4	1377.7
NOX MASS GRAMS	1.30	.24	.66
HC GRAMS/KM (GRAMS/MILE)	.39 (.63)	.03 (.05)	.10 (.15)
CO GRAMS/KM (GRAMS/MILE)	6.51 (10.48)	.90 (1.45)	2.11 (3.40)
CO2 GRAMS/KM (GRAMS/MILE)	295.9 (476.2)	240.1 (386.3)	238.4 (383.6)
NOX GRAMS/KM (GRAMS/MILE)	.23 (.36)	.04 (.06)	.11 (.18)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.12 (17.93)	10.31 (22.81)	10.33 (22.77)
CALCULATED DISTANCE KM (MILES)	5.75 (3.57)	6.18 (3.84)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.12 (.20)
CO GRAMS/KM (GRAMS/MILE)	2.40 (3.86)
CO2 GRAMS/KM (GRAMS/MILE)	251.18 (404.15)
NOX GRAMS/KM (GRAMS/MILE)	.10 (.16)
FUEL CONSUMPTION BY CB L/100KM (MPG)	10.90 (21.59)

TABLE E-15. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 11/28/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-371-F
ODOMETER 963

BAROMETER 747.52 MM HG(29.43 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 33 PCT
ABSOLUTE HUMIDITY 6.0 GM/KG(42.1 GRAINS/LB) NOX HUMIDITY C.F. .8662

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10329	17821	10363
CVS FLOW STD. CU. METRES(SCF)	61.5 (2173.6)	105.7 (3732.2)	61.4 (2169.9)
HC SAMPLE METER/RANGE/PPM	73.7/ 2/ 74	14.1/ 2/ 14	30.1/ 2/ 30
HC BCKGRD METER/RANGE/PPM	12.3/ 2/ 12	11.8/ 2/ 12	9.5/ 2/ 10
CO SAMPLE METER/RANGE/PPM	29.4/ 3/ 565	51.5/13/ 99	84.3/12/ 197
CO BCKGRD METER/RANGE/PPM	.3/ 3/ 7	4.2/13/ 4	1.1/12/ 2
CO2 SAMPLE METER/RANGE/PCT	85.7/ 3/ 1.59	50.4/ 3/ .87	72.7/ 3/ 1.32
CO2 BCKGRD METER/RANGE/PCT	4.3/ 3/ .07	3.7/ 3/ .06	3.7/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	18.5/ 2/ 18	4.0/ 2/ 4	8.3/ 2/ 8
NOX BCKGRD METER/RANGE/PPM	2.0/ 2/ 2	1.8/ 2/ 2	1.6/ 2/ 2
DILUTION FACTOR	8.12	15.21	9.99
HC CONCENTRATION PPM	63	3	22
CO CONCENTRATION PPM	536	44	189
CO2 CONCENTRATION PCT	1.53	.82	1.27
NOX CONCENTRATION PPM	14.7	2.3	6.9
HC MASS GRAMS	2.23	.19	.76
CO MASS GRAMS	38.38	5.41	13.49
CO2 MASS GRAMS	1724.8	1590.4	1426.9
NOX MASS GRAMS	1.71	.41	.70
HC GRAMS/KM (GRAMS/MILE)	.39 (.62)	.03 (.05)	.13 (.21)
CO GRAMS/KM (GRAMS/MILE)	6.67 (10.73)	.87 (1.40)	2.34 (3.77)
CO2 GRAMS/KM (GRAMS/MILE)	299.8 (482.4)	256.3 (412.3)	247.8 (398.7)
NOX GRAMS/KM (GRAMS/MILE)	.30 (.48)	.07 (.11)	.12 (.20)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.30 (17.69)	11.00 (21.39)	10.75 (21.88)
CALCULATED DISTANCE KM (MILES)	5.75 (3.58)	6.21 (3.86)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.13 (.21)
CO GRAMS/KM (GRAMS/MILE)	2.48 (3.98)
CO2 GRAMS/KM (GRAMS/MILE)	262.99 (423.07)
NOX GRAMS/KM (GRAMS/MILE)	.13 (.21)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.41 (20.62)

TABLE E-16. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 12/ 4/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-371-F
ODOMETER 1055

BAROMETER 744.47 MM HG(29.31 IN HG)
DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)

RELATIVE HUMIDITY 37 PCT
ABSOLUTE HUMIDITY 5.8 GM/KG(40.8 GRAINS/LB)

NOX HUMIDITY C.F. .8615

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10382	17793	10361
CVS FLOW STD. CU. METRES(SCF)	61.4 (2170.2)	105.3 (3718.6)	61.3 (2165.0)
HC SAMPLE METER/RANGE/PPM	73.0/ 2/ 73	13.8/ 2/ 14	26.3/ 2/ 26
HC BCKGRD METER/RANGE/PPM	12.8/ 2/ 13	11.9/ 2/ 12	10.3/ 2/ 10
CO SAMPLE METER/RANGE/PPM	23.4/ 3/ 541	52.7/13/ 50	81.9/12/ 190
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	1.1/13/ 1	3.6/12/ 6
CO2 SAMPLE METER/RANGE/PCT	84.0/ 3/ 1.55	50.7/ 3/ .88	70.1/ 3/ 1.27
CO2 BCKGRD METER/RANGE/PCT	3.2/ 3/ .05	3.3/ 3/ .05	3.3/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	18.8/ 2/ 19	3.1/ 2/ 3	8.1/ 2/ 8
NOX BCKGRD METER/RANGE/PPM	.4/ 2/ 0	.2/ 2/ 0	.2/ 2/ 0
DILUTION FACTOR	8.31	15.11	10.41
HC CONCENTRATION PPM	62	3	17
CO CONCENTRATION PPM	514	48	178
CO2 CONCENTRATION PCT	1.51	.83	1.22
NOX CONCENTRATION PPM	18.4	2.9	7.9
HC MASS GRAMS	2.19	.16	.60
CO MASS GRAMS	36.80	5.87	12.69
CO2 MASS GRAMS	1698.8	1607.0	1370.1
NOX MASS GRAMS	1.87	.51	.80
HC GRAMS/KM (GRAMS/MILE)	.38 (.61)	.03 (.04)	.10 (.17)
CO GRAMS/KM (GRAMS/MILE)	6.38 (10.26)	.95 (1.52)	2.20 (3.53)
CO2 GRAMS/KM (GRAMS/MILE)	294.5 (473.8)	258.9 (416.5)	237.3 (381.8)
NOX GRAMS/KM (GRAMS/MILE)	.32 (.52)	.08 (.13)	.14 (.22)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.05 (18.03)	11.12 (21.16)	10.29 (22.86)
CALCULATED DISTANCE KM (MILES)	5.77 (3.59)	6.21 (3.86)	5.77 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	2.41 (3.89)
CO2 GRAMS/KM (GRAMS/MILE)	260.32 (418.85)
NOX GRAMS/KM (GRAMS/MILE)	.15 (.24)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.29 (20.84)

TABLE E-17. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 12/ 5/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-371-F
ODOMETER 1074

BAROMETER 738.12 MM HG(29.06 IN HG)
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

RELATIVE HUMIDITY 22 PCT
ABSOLUTE HUMIDITY 3.8 GM/KG(26.3 GRAINS/LB)

NOX HUMIDITY C.F. .8138

BAG RESULTS

	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER			
DESCRIPTION			
BLOWER DIF P MM. H20(IN. H20)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H20(IN. H20)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10376	17819	10357
CVS FLOW STD. CU. METRES(SCF)	60.5 (2138.1)	104.0 (3671.7)	60.4 (2133.4)
HC SAMPLE METER/RANGE/PPM	79.7/ 2/ 80	13.2/ 2/ 13	29.0/ 2/ 29
HC BCKGRD METER/RANGE/PPM	9.5/ 2/ 10	10.3/ 2/ 10	8.9/ 2/ 9
CO SAMPLE METER/RANGE/PPM	23.8/ 3/ 550	51.2/13/ 49	80.3/12/ 186
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	1.3/13/ 1	.5/12/ 1
CO2 SAMPLE METER/RANGE/PCT	85.3/ 3/ 1.58	49.8/ 3/ .86	71.5/ 3/ 1.29
CO2 BCKGRD METER/RANGE/PCT	3.3/ 3/ .05	3.8/ 3/ .06	3.6/ 3/ .06
NOX SAMPLE METER/RANGE/PPM	15.2/ 2/ 15	2.6/ 2/ 3	7.2/ 2/ 7
NOX BCKGRD METER/RANGE/PPM	.5/ 2/ 1	.5/ 2/ 1	.4/ 2/ 0
DILUTION FACTOR	8.17	15.41	10.19
HC CONCENTRATION PPM	71	4	21
CO CONCENTRATION PPM	528	46	179
CO2 CONCENTRATION PCT	1.54	.81	1.25
NOX CONCENTRATION PPM	14.8	2.1	6.8
HC MASS GRAMS	2.49	.21	.73
CO MASS GRAMS	37.21	5.63	12.59
CO2 MASS GRAMS	1702.4	1539.7	1377.5
NOX MASS GRAMS	1.39	.35	.64
HC GRAMS/KM (GRAMS/MILE)	.43 (.70)	.03 (.06)	.13 (.20)
CO GRAMS/KM (GRAMS/MILE)	6.49 (10.44)	.91 (1.46)	2.18 (3.52)
CO2 GRAMS/KM (GRAMS/MILE)	297.0 (477.8)	248.5 (399.9)	239.0 (384.6)
NOX GRAMS/KM (GRAMS/MILE)	.24 (.39)	.06 (.09)	.11 (.18)
FUEL CONSUMPTION BY CB L/100KM(MPG)	13.17 (17.86)	10.67 (22.04)	10.37 (22.69)
CALCULATED DISTANCE KM (MILES)	5.73 (3.56)	6.19 (3.85)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.14 (.23)
CO GRAMS/KM (GRAMS/MILE)	2.41 (3.88)
CO2 GRAMS/KM (GRAMS/MILE)	255.94 (411.80)
NOX GRAMS/KM (GRAMS/MILE)	.11 (.18)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.10 (21.18)

TABLE E-18. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 11/29/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 9.9 KW(11.3 HP)
GASOLINE EM-372-F
ODOMETER 989

BAROMETER 742.95 MM HG(29.25 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 27 PCT
ABSOLUTE HUMIDITY 4.9 GM/KG(34.3 GRAINS/LB) NOX HUMIDITY C.F. .8396

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H20(IN. H20)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H20(IN. H20)	1473.2 (58.0)	1473.2 (58.0)	1473.2 (58.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10362	17805	10363
CVS FLOW STD. CU. METRES(SCF)	61.0 (2153.0)	104.7 (3699.5)	61.0 (2152.8)
HC SAMPLE METER/RANGE/PPM	65.7/ 2/ 66	13.3/ 2/ 13	24.1/ 2/ 24
HC BCKGRD METER/RANGE/PPM	11.3/ 2/ 11	10.2/ 2/ 10	8.3/ 2/ 8
CO SAMPLE METER/RANGE/PPM	81.4/11/ 376	45.3/13/ 43	69.1/12/ 156
CO BCKGRD METER/RANGE/PPM	1.4/11/ 4	2.0/13/ 2	.4/12/ 1
CO2 SAMPLE METER/RANGE/PCT	81.6/ 3/ 1.50	49.9/ 3/ .87	70.8/ 3/ 1.28
CO2 BCKGRD METER/RANGE/PCT	2.8/ 3/ .04	3.4/ 3/ .05	2.5/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	16.8/ 2/ 17	3.4/ 2/ 3	10.3/ 2/ 10
NOX BCKGRD METER/RANGE/PPM	1.8/ 2/ 2	1.4/ 2/ 1	1.1/ 2/ 1
DILUTION FACTOR	9.67	15.39	10.32
HC CONCENTRATION PPM	56	4	17
CO CONCENTRATION PPM	358	40	150
CO2 CONCENTRATION PCT	1.47	.82	1.25
NOX CONCENTRATION PPM	15.2	2.1	9.3
HC MASS GRAMS	1.96	.23	.58
CO MASS GRAMS	25.44	4.89	10.66
CO2 MASS GRAMS	1635.4	1566.2	1390.8
NOX MASS GRAMS	1.49	.35	.91
HC GRAMS/KM (GRAMS/MILE)	.34 (.55)	.04 (.06)	.10 (.16)
CO GRAMS/KM (GRAMS/MILE)	4.42 (7.11)	.79 (1.27)	1.85 (2.98)
CO2 GRAMS/KM (GRAMS/MILE)	284.1 (457.2)	253.3 (407.6)	241.4 (388.4)
NOX GRAMS/KM (GRAMS/MILE)	.26 (.42)	.06 (.09)	.14 (.25)
FUEL CONSUMPTION BY CB L/100KM(MPG)	12.47 (18.87)	10.87 (21.64)	10.44 (22.53)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.18 (3.84)	5.76 (3.58)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	1.83 (2.95)
CO2 GRAMS/KM (GRAMS/MILE)	256.93 (412.60)
NOX GRAMS/KM (GRAMS/MILE)	.13 (.20)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.08 (21.22)

TABLE E-19. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 - RUN
DATE 11/30/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.4 KW(11.3 HP)
GASOLINE EM-372-F
ODOMETER 1009

BAROMETER 741.93 MM HG(29.19 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 29 PCT
ABSOLUTE HUMIDITY 5.2 GM/KG(36.1 GRAINS/LB)

NOX HUMIDITY C.F. .8455

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10368	17832	10371
CVS FLOW STD. CU. METRES(SCF)	61.0 (2155.7)	105.0 (3707.4)	61.0 (2156.1)
HC SAMPLE METER/RANGE/PPM	62.7/ 2/ 63	13.0/ 2/ 13	23.7/ 2/ 24
HC BCKGRD METER/RANGE/PPM	9.9/ 2/ 10	9.6/ 2/ 10	8.6/ 2/ 9
CO SAMPLE METER/RANGE/PPM	84.4/11/ 399	53.1/13/ 51	75.5/12/ 173
CO BCKGRD METER/RANGE/PPM	2.6/11/ 8	9.9/13/ 9	2.7/12/ 5
CO2 SAMPLE METER/RANGE/PCT	84.4/ 3/ 1.56	52.1/ 3/ .91	73.6/ 3/ 1.34
CO2 BCKGRD METER/RANGE/PCT	3.1/ 3/ .05	4.3/ 3/ .07	4.6/ 3/ .07
NOX SAMPLE METER/RANGE/PPM	17.4/ 2/ 17	2.9/ 2/ 3	8.5/ 2/ 9
NOX BCKGRD METER/RANGE/PPM	.9/ 2/ 1	.9/ 2/ 1	1.0/ 2/ 1
DILUTION FACTOR	8.34	14.66	9.88
HC CONCENTRATION PPM	54	4	16
CO CONCENTRATION PPM	377	91	162
CO2 CONCENTRATION PCT	1.52	.85	1.27
NOX CONCENTRATION PPM	16.6	2.1	7.6
HC MASS GRAMS	1.90	.25	.56
CO MASS GRAMS	26.76	5.01	11.53
CO2 MASS GRAMS	1698.2	1626.7	1424.5
NOX MASS GRAMS	1.64	.35	.75
HC GRAMS/KM (GRAMS/MILE)	.33 (.53)	.04 (.06)	.10 (.16)
CO GRAMS/KM (GRAMS/MILE)	4.65 (7.48)	.80 (1.29)	1.99 (3.21)
CO2 GRAMS/KM (GRAMS/MILE)	294.9 (474.5)	259.9 (418.3)	246.3 (396.3)
NOX GRAMS/KM (GRAMS/MILE)	.29 (.46)	.06 (.09)	.13 (.21)
FUEL CONSUMPTION BY CB L/100KM(MPG)	12.94 (18.18)	11.15 (21.09)	10.66 (22.07)
CALCULATED DISTANCE KM (MILES)	5.76 (3.58)	6.26 (3.89)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	1.92 (3.09)
CO2 GRAMS/KM (GRAMS/MILE)	263.41 (423.82)
NOX GRAMS/KM (GRAMS/MILE)	.12 (.20)
FUEL CONSUMPTION BY CB L/100KM (MPG)	11.39 (20.64)

TABLE E-20. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 330
VEHICLE MODEL 78 SAAB
ENGINE 2.0 L(121 CID)
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 12/ 1/78
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 1364 KG(3000 LBS)
ACTUAL ROAD LOAD 8.9 KW(11.3 HP)
GASOLINE EM-372-F
ODOMETER 1027

BAROMETER 739.14 MM HG(29.10 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 39 PCT
ABSOLUTE HUMIDITY 7.0 GM/KG(48.9 GRAINS/LB)

NOX HUMIDITY C.F. .8906

BAG RESULTS	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10357	17808	10365
CVS FLOW STD. CU. METRES(SCF)	60.7 (2144.8)	104.4 (3687.7)	60.8 (2146.2)
HC SAMPLE METER/RANGE/PPM	61.7/ 2/ 62	12.4/ 2/ 12	22.3/ 2/ 22
HC BCKGRD METER/RANGE/PPM	10.1/ 2/ 10	9.9/ 2/ 10	8.6/ 2/ 9
CO SAMPLE METER/RANGE/PPM	86.6/11/ 417	44.4/13/ 42	69.3/12/ 157
CO BCKGRD METER/RANGE/PPM	1.6/11/ 5	1.9/13/ 2	1.3/12/ 2
CO2 SAMPLE METER/RANGE/PCT	83.6/ 3/ 1.54	48.2/ 3/ .83	70.6/ 3/ 1.28
CO2 BCKGRD METER/RANGE/PCT	2.4/ 3/ .04	3.9/ 3/ .06	3.5/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	19.1/ 2/ 19	2.3/ 2/ 2	9.6/ 2/ 10
NOX BCKGRD METER/RANGE/PPM	.9/ 2/ 1	.7/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	8.42	15.99	10.36
HC CONCENTRATION PPM	53	3	15
CO CONCENTRATION PPM	395	39	149
CO2 CONCENTRATION PCT	1.51	.78	1.23
NOX CONCENTRATION PPM	18.3	1.6	8.9
HC MASS GRAMS	1.85	.19	.51
CO MASS GRAMS	27.92	4.77	10.52
CO2 MASS GRAMS	1681.6	1484.6	1366.4
NOX MASS GRAMS	1.89	.29	.92
HC GRAMS/KM (GRAMS/MILE)	.32 (.52)	.03 (.05)	.09 (.14)
CO GRAMS/KM (GRAMS/MILE)	4.84 (7.78)	.76 (1.23)	1.82 (2.93)
CO2 GRAMS/KM (GRAMS/MILE)	291.4 (468.8)	237.3 (381.9)	236.4 (380.4)
NOX GRAMS/KM (GRAMS/MILE)	.33 (.53)	.05 (.08)	.16 (.26)
FUEL CONSUMPTION BY CB L/100KM(MPG)	12.80 (18.37)	10.18 (23.10)	10.23 (23.01)
CALCULATED DISTANCE KM (MILES)	5.77 (3.59)	6.26 (3.89)	5.78 (3.59)

COMPOSITE FTP RESULTS	
HC GRAMS/KM (GRAMS/MILE)	.11 (.17)
CO GRAMS/KM (GRAMS/MILE)	1.89 (3.05)
CO2 GRAMS/KM (GRAMS/MILE)	248.24 (399.42)
NOX GRAMS/KM (GRAMS/MILE)	.14 (.22)
FUEL CONSUMPTION BY CB L/100KM (MPG)	10.74 (21.91)

APPENDIX F

MARQUIS FTP RESULTS FOR REGULATED AND UNREGULATED EMISSIONS WITH THREE TEST FUELS

TABLE F-1. SUMMARY OF REGULATED, INDIVIDUAL HYDROCARBON AND ALDEHYDE EMISSIONS FROM 1979 MARQUIS

Test No.	Fuel	Date	FTP Emissions Rates, g/km HC	CO	NO_x	HC Evaporative Emissions, g DBL	HSL	Total	Consumption ℓ/100 km
36-1	EM-389-F	5-08-79	0.14	1.96	0.53	0.30	0.92	1.22	16.32
36-2	EM-389-F	5-09-79	0.15	2.39	0.50	0.33	1.18	1.51	16.59
36-3	EM-389-F	5-10-79	0.22	2.70	0.48	0.44	1.26	1.70	16.27
36-4	EM-389-F	5-22-79	0.11	1.58	0.47	0.33	0.90	1.23	16.20
36-5	EM-389-F	5-23-79	0.12	1.96	0.48	0.31	1.45	1.76	16.13
	Average		0.15	2.12	0.49	0.34	1.14	1.48	16.30
37-1	EM-385-F	5-14-79	0.09	1.18	0.50	0.30	0.93	1.23	15.49
37-2	EM-385-F	5-15-79	0.12	1.37	0.48	0.36	1.13	1.49	15.69
	Average		0.11	1.28	0.49	0.33	1.03	1.36	15.59
38-1	EM-386-F	5-16-79	0.10	1.26	0.50	0.30	0.99	1.29	16.32
38-2	EM-386-F	5-17-79	0.12	1.51	0.50	0.33	1.39	1.72	16.21
	Average		0.11	1.39	0.50	0.32	1.19	1.51	16.27

			FTP Individual Hydrocarbon Emissions Rates mg/km Methane	Ethylene	Ethane	Acetylene	Propane	Propylene	Benzene	Toluene
36-1	EM-389-F	5-08-79	54.81	3.98	4.60	2.42	1.12	1.68	4.72	14.48
36-2	EM-389-F	5-09-79	48.90	4.66	3.85	3.73	1.43	2.17	5.03	18.52
36-3	EM-389-F	5-10-79	55.43	0.87	3.85	3.83	2.30	3.04	5.41	15.54
36-4	EM-389-F	5-22-79	42.75	2.98	2.30	3.29	0.81	1.37	2.80	12.18
36-5	EM-389-F	5-23-79	41.70	2.98	2.05	2.67	1.37	1.30	1.74	11.37
	Average		48.72	3.09	3.33	3.19	1.41	1.91	3.94	14.42
37-1	EM-385-F	5-14-79	39.71	2.11	3.54	1.18	0.81	1.12	1.80	8.58
37-2	EM-385-F	5-15-79	43.19	2.61	3.73	2.11	1.06	1.24	2.61	10.50
	Average		41.45	2.36	3.64	1.65	0.94	1.18	2.21	9.54
38-1	EM-386-F	5-16-79	38.22	2.55	3.29	1.74	0.37	1.37	2.61	10.81
38-2	EM-386-F	5-17-79	45.36	3.11	3.67	2.86	1.06	1.49	2.36	11.93
	Average		41.79	2.83	3.48	2.30	0.72	1.43	2.49	11.37

			FTP Aldehydes Emission Rates, mg/km Form-	Acet-	Acetone*	Isobutry-	Methylethyl Ketone	Croton-	Hexa-	Benzene	Total
36-1	EM-389-F	5-08-79	0.87	0	0	0.37	0	0	0	0	1.24
36-2	EM-389-F	5-09-79	1.24	0	0.44	0	0.37	0	0	0	2.05
36-3	EM-389-F	5-10-79	0.56	0.12	0	0.12	0	0.19	0	0.99	1.99
36-4	EM-389-F	5-22-79	0.99	0	0	0	0	0	0	0	0.99
36-5	EM-389-F	5-23-79	0	0	0	0	0	0	0	0.56	0.56
	Average		0.73	0.02	0.09	0.10	0.07	0.04	0	0.78	1.37
37-1	EM-385-F	5-14-79	0	0	0	0.06	0	0	0	0	0.06
37-2	EM-385-F	5-15-79	2.05	0	0	0	0	0	0	0	2.05
	Average		1.03	0	0	0.03	0	0	0	0	1.06
38-1	EM-386-F	5-16-79	1.62	0	0	0	0	0.12	0	0.06	1.80
38-2	EM-386-F	5-17-79	0.37	0	0	0	0	0.06	0	0	0.44
	Average		1.00	0	0	0	0	0.09	0	0.03	1.12

* Includes acrolein and propanol

TABLE F-2. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 14
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/ 8/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-389-F
ODOMETER 1019

BAROMETER 739.06 MM HG(28.90 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 70 PCT
ABSOLUTE HUMIDITY 13.0 GM/KG(90.9 GRAINS/LB)

NOX HUMIDITY C.F. 1.0807

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1579.8 (62.0)	1579.8 (62.0)	1579.8 (62.0)
BLOWER INLET P MM. H2O(IN. H2O)	1422.4 (56.0)	1422.4 (56.0)	1422.4 (56.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10376	17757	10347
CVS FLOW STD. CU. METRES(SCF)	60.7 (2143.0)	103.8 (3665.8)	60.5 (2136.5)
HC SAMPLE METER/RANGE/PPM	70.7/ 2/ 71	19.6/ 2/ 20	29.8/ 2/ 30
HC BCKGRD METER/RANGE/PPM	14.6/ 2/ 15	13.8/ 2/ 14	14.3/ 2/ 14
CO SAMPLE METER/RANGE/PPM	27.6/ 3/ 642	4.6/13/ 4	59.1/12/ 132
CO BCKGRD METER/RANGE/PPM	.1/ 3/ 2	.5/13/ 0	.4/12/ 1
CO2 SAMPLE METER/RANGE/PCT	46.7/ 2/ 2.10	73.0/ 3/ 1.33	42.0/ 2/ 1.84
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.4/ 3/ .04	1.4/ 2/ .05
NOX SAMPLE METER/RANGE/PPM	47.8/ 2/ 48	10.6/ 2/ 11	25.0/ 2/ 25
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	.9/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	6.19	10.09	7.21
HC CONCENTRATION PPM	58	7	17
CO CONCENTRATION PPM	600	4	124
CO2 CONCENTRATION PCT	2.06	1.29	1.80
NOX CONCENTRATION PPM	46.7	9.8	24.3
HC MASS GRAMS	2.05	.93	.61
CO MASS GRAMS	42.40	.96	8.70
CO2 MASS GRAMS	2284.1	2993.4	1995.0
NOX MASS GRAMS	5.86	2.10	3.04
HC GRAMS/KM (GRAMS/MILE)	.35 (.57)	.07 (.11)	.11 (.17)
CO GRAMS/KM (GRAMS/MILE)	7.30 (11.75)	.07 (.12)	1.51 (2.42)
CO2 GRAMS/KM (GRAMS/MILE)	393.5 (633.1)	390.6 (628.5)	345.4 (555.7)
NOX GRAMS/KM (GRAMS/MILE)	1.01 (1.62)	.34 (.54)	.53 (.85)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.33 (13.57)	16.69 (14.10)	16.86 (15.84)
CALCULATED DISTANCE KM (MILES)	5.80 (3.61)	6.26 (3.89)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.19 (.32)
CO GRAMS/KM (GRAMS/MILE)	1.96 (3.16)
CO2 GRAMS/KM (GRAMS/MILE)	378.81 (609.51)
NOX GRAMS/KM (GRAMS/MILE)	.53 (.85)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.32 (14.42)

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TABLE F-3. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 14
VEHICLE MODEL 79 MER MARQUIS
ENGINE 8.0 L(-0 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/ 9/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-389-F
ODOMETER 1030

BAROMETER 733.09 MM HG(28.86 IN HG)
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

RELATIVE HUMIDITY 67 PCT
ABSOLUTE HUMIDITY 13.3 GM/KG(93.0 GRAINS/LB)

NOX HUMIDITY C.F. 1.0925

BAG RESULTS

BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1422.4 (56.0)	1422.4 (56.0)	1422.4 (56.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10354	17793	10369
CVS FLOW STD. CU. METRES(SCF)	60.3 (2131.4)	103.7 (3662.3)	60.4 (2134.2)
HC SAMPLE METER/RANGE/PPM	87.7/ 2/ 88	19.9/ 2/ 20	31.5/ 2/ 31
HC BCKGRD METER/RANGE/PPM	16.3/ 2/ 16	15.8/ 2/ 16	15.8/ 2/ 16
CO SAMPLE METER/RANGE/PPM	39.1/ 3/ 931	5.6/13/ 5	55.6/13/ 53
CO BCKGRD METER/RANGE/PPM	.3/ 3/ 7	1.2/13/ 1	.9/13/ 1
CO2 SAMPLE METER/RANGE/PCT	47.4/ 2/ 2.14	73.8/ 3/ 1.34	42.1/ 2/ 1.85
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	2.8/ 3/ .04	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	43.3/ 2/ 43	10.2/ 2/ 10	24.3/ 2/ 24
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.0/ 2/ 1	.9/ 2/ 1
DILUTION FACTOR	6.00	9.97	7.21
HC CONCENTRATION PPM	74	6	18
CO CONCENTRATION PPM	867	4	49
CO2 CONCENTRATION PCT	2.09	1.30	1.81
NOX CONCENTRATION PPM	42.2	9.3	23.5
HC MASS GRAMS	2.58	.34	.62
CO MASS GRAMS	60.94	.50	3.48
CO2 MASS GRAMS	2314.7	2474.9	2005.6
NOX MASS GRAMS	5.32	2.02	2.97
HC GRAMS/KM (GRAMS/MILE)	.45 (.72)	.05 (.09)	.11 (.17)
CO GRAMS/KM (GRAMS/MILE)	10.55 (16.98)	.08 (.13)	.60 (.97)
CO2 GRAMS/KM (GRAMS/MILE)	400.8 (644.8)	397.6 (639.7)	347.2 (558.6)
NOX GRAMS/KM (GRAMS/MILE)	.92 (1.48)	.32 (.52)	.51 (.83)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.87 (13.16)	16.98 (13.85)	14.87 (15.82)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.22 (3.87)	5.78 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.15 (.24)
CO GRAMS/KM (GRAMS/MILE)	2.39 (3.85)
CO2 GRAMS/KM (GRAMS/MILE)	384.91 (618.52)
NOX GRAMS/KM (GRAMS/MILE)	.50 (.80)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.59 (14.18)

TABLE F-4. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 19
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 3 RUN
DATE 5/10/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-389-F
ODOMETER 1041

BAROMETER 739.82 MM HG(29.93 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 82 PCT
ABSOLUTE HUMIDITY 14.8 GM/KG(103.4 GRAINS/LB)

NOX HUMIDITY C.F. 1.1538

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10366	17790	10351
CVS FLOW STD. CU. METRES(SCF)	60.4 (2133.4)	103.7 (3661.0)	60.3 (2130.0)
HC SAMPLE METER/RANGE/PPM	13.1/ 3/ 131	23.7/ 2/ 24	49.5/ 2/ 49
HC BCKGRD METER/RANGE/PPM	2.4/ 3/ 24	20.5/ 2/ 20	21.1/ 2/ 21
CO SAMPLE METER/RANGE/PPM	39.9/ 3/ 952	5.2/13/ 5	66.5/12/ 150
CO BCKGRD METER/RANGE/PPM	.3/ 3/ 7	1.3/13/ 1	.4/12/ 1
CO2 SAMPLE METER/RANGE/PCT	47.0/ 2/ 2.11	73.0/ 3/ 1.33	41.6/ 2/ 1.82
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .05	3.0/ 3/ .05	1.2/ 2/ .04
NOX SAMPLE METER/RANGE/PPM	40.8/ 2/ 41	9.8/ 2/ 10	22.6/ 2/ 23
NOX BCKGRD METER/RANGE/PPM	1.8/ 2/ 2	1.4/ 2/ 1	1.2/ 2/ 1
DILUTION FACTOR	6.05	10.09	7.27
HC CONCENTRATION PPM	111	5	31
CO CONCENTRATION PPM	882	4	140
CO2 CONCENTRATION PCT	2.07	1.28	1.79
NOX CONCENTRATION PPM	39.3	8.5	21.6
HC MASS GRAMS	3.87	.31	1.09
CO MASS GRAMS	62.06	.45	9.82
CO2 MASS GRAMS	2292.4	2437.5	1972.4
NOX MASS GRAMS	5.24	1.95	2.87
HC GRAMS/KM (GRAMS/MILE)	.66 (1.07)	.05 (.08)	.19 (.30)
CO GRAMS/KM (GRAMS/MILE)	10.66 (17.15)	.07 (.11)	1.69 (2.72)
CO2 GRAMS/KM (GRAMS/MILE)	393.6 (633.3)	388.5 (625.2)	340.1 (547.2)
NOX GRAMS/KM (GRAMS/MILE)	.90 (1.45)	.31 (.50)	.49 (.80)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.60 (13.36)	16.60 (14.18)	14.66 (16.05)
CALCULATED DISTANCE KM (MILES)	5.82 (3.62)	6.27 (3.90)	5.80 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.21 (.35)
CO GRAMS/KM (GRAMS/MILE)	2.71 (4.35)
CO2 GRAMS/KM (GRAMS/MILE)	376.33 (605.52)
NOX GRAMS/KM (GRAMS/MILE)	.48 (.78)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.77 (14.46)

TABLE F-5. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 14
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 4 RUN
DATE 5/22/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-389-F
ODOMETER 1150

BAROMETER 738.63 MM HG(29.08 IN HG)
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

RELATIVE HUMIDITY 61 PCT
ABSOLUTE HUMIDITY 10.9 GM/KG(76.6 GRAINS/LB)

NOX HUMIDITY C.F. 1.0026

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1574.8 (62.0)	1574.8 (62.0)	1574.8 (62.0)
BLOWER INLET P MM. H2O(IN. H2O)	1397.0 (55.0)	1397.0 (55.0)	1397.0 (55.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10345	17752	10335
CVS FLOW STD. CU. METRES(SCF)	61.1 (2159.8)	104.9 (3705.6)	61.1 (2157.4)
HC SAMPLE METER/RANGE/PPM	58.4/ 2/ 58	14.6/ 2/ 15	25.5/ 2/ 25
HC BCKGRD METER/RANGE/PPM	11.0/ 2/ 11	11.4/ 2/ 11	11.0/ 2/ 11
CO SAMPLE METER/RANGE/PPM	24.3/ 3/ 562	8.7/13/ 8	63.9/13/ 62
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	3.5/13/ 3	1.8/13/ 2
CO2 SAMPLE METER/RANGE/PCT	47.0/ 2/ 2.11	70.6/ 3/ 1.28	95.9/ 3/ 1.80
CO2 BCKGRD METER/RANGE/PCT	1.2/ 3/ .02	2.7/ 3/ .04	2.9/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	41.3/ 2/ 41	11.4/ 2/ 11	25.6/ 2/ 26
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.7/ 2/ 2	1.2/ 2/ 1
DILUTION FACTOR	6.17	10.48	7.40
HC CONCENTRATION PPM	49	4	16
CO CONCENTRATION PPM	525	5	57
CO2 CONCENTRATION PCT	2.10	1.24	1.77
NOX CONCENTRATION PPM	40.2	9.9	24.6
HC MASS GRAMS	1.73	.26	.56
CO MASS GRAMS	37.36	.61	4.05
CO2 MASS GRAMS	2350.8	2380.7	1980.5
NOX MASS GRAMS	4.74	1.99	2.89
HC GRAMS/KM (GRAMS/MILE)	.30 (.48)	.04 (.07)	.10 (.16)
CO GRAMS/KM (GRAMS/MILE)	6.47 (10.40)	.10 (.16)	.70 (1.13)
CO2 GRAMS/KM (GRAMS/MILE)	406.9 (654.6)	382.4 (615.3)	343.3 (552.4)
NOX GRAMS/KM (GRAMS/MILE)	.82 (1.32)	.32 (.52)	.50 (.81)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.84 (13.19)	16.33 (14.40)	14.71 (15.99)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.23 (3.87)	5.77 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.11 (.18)
CO GRAMS/KM (GRAMS/MILE)	1.58 (2.55)
CO2 GRAMS/KM (GRAMS/MILE)	376.76 (606.20)
NOX GRAMS/KM (GRAMS/MILE)	.47 (.76)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.20 (14.52)

TABLE F-6. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4443-001

VEHICLE NO. 19
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 5 RUN
DATE 5/23/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-389-F
ODOMETER 1161

BAROMETER 742.44 MM HG(29.23 IN HG)
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

RELATIVE HUMIDITY 52 PCT
ABSOLUTE HUMIDITY 10.2 GM/KG(71.1 GRAINS/LB)

NOX HUMIDITY C.F. .9819

BAG RESULTS	1 COLD TRANSIENT	2 STABILIZED	3 HOT TRANSIENT
BAG NUMBER	1	2	3
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1600.2 (63.0)	1600.2 (63.0)	1600.2 (63.0)
BLOWER INLET P MM. H2O(IN. H2O)	1422.4 (56.0)	1422.4 (56.0)	1422.4 (56.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10340	17790	10350
CVS FLOW STD. CU. METRES(SCF)	61.2 (2162.9)	105.4 (3721.2)	61.3 (2165.0)
HC SAMPLE METER/RANGE/PPM	70.4/ 2/ 70	15.6/ 2/ 16	25.0/ 2/ 25
HC BCKGRD METER/RANGE/PPM	13.3/ 2/ 13	12.3/ 2/ 12	12.2/ 2/ 12
CO SAMPLE METER/RANGE/PPM	30.6/ 3/ 716	4.8/13/ 5	72.4/13/ 71
CO BCKGRD METER/RANGE/PPM	.2/ 3/ 5	1.3/13/ 1	1.7/13/ 2
CO2 SAMPLE METER/RANGE/PCT	46.8/ 2/ 2.10	71.3/ 3/ 1.29	99.2/ 3/ 1.77
CO2 BCKGRD METER/RANGE/PCT	1.4/ 2/ .06	2.7/ 3/ .04	2.8/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	46.1/ 2/ 46	12.2/ 2/ 12	25.9/ 2/ 26
NOX BCKGRD METER/RANGE/PPM	2.2/ 2/ 2	1.9/ 2/ 2	1.7/ 2/ 2
DILUTION FACTOR	6.15	10.37	7.55
HC CONCENTRATION PPM	59	4	19
CO CONCENTRATION PPM	671	3	66
CO2 CONCENTRATION PCT	2.06	1.25	1.73
NOX CONCENTRATION PPM	44.3	10.5	24.4
HC MASS GRAMS	2.09	.27	.51
CO MASS GRAMS	42.87	.41	4.71
CO2 MASS GRAMS	2304.7	2418.3	1441.2
NOX MASS GRAMS	5.09	2.07	2.81
HC GRAMS/KM (GRAMS/MILE)	.36 (.58)	.04 (.07)	.09 (.14)
CO GRAMS/KM (GRAMS/MILE)	8.24 (13.26)	.07 (.11)	.81 (1.31)
CO2 GRAMS/KM (GRAMS/MILE)	396.8 (638.5)	386.3 (621.5)	334.9 (538.9)
NOX GRAMS/KM (GRAMS/MILE)	.88 (1.41)	.33 (.53)	.49 (.78)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.54 (13.41)	16.50 (14.26)	14.36 (16.38)
CALCULATED DISTANCE KM (MILES)	5.81 (3.61)	6.26 (3.89)	5.80 (3.60)

COMPOSITE FTP RESULTS	
HC GRAMS/KM (GRAMS/MILE)	.12 (.20)
CO GRAMS/KM (GRAMS/MILE)	1.96 (3.16)
CO2 GRAMS/KM (GRAMS/MILE)	374.39 (602.40)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.78)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.13 (14.59)

TABLE F-7. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 14
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/14/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-385-F
ODOMETER 1067

BAROMETER 744.73 MM HG(29.32 IN HG)
DRY BULB TEMP. 21.7 DEG C(71.0 DEG F)

RELATIVE HUMIDITY 49 PCT
ABSOLUTE HUMIDITY 8.0 GM/KG(56.0 GRAINS/LB)

NOX HUMIDITY C.F. .9179

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1676.4 (66.0)	1676.4 (66.0)	1676.4 (66.0)
BLOWER INLET P MM. H2O(IN. H2O)	1498.6 (59.0)	1498.6 (59.0)	1498.6 (59.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10332	17758	10332
CVS FLOW STD. CU. METRES(SCF)	60.6 (2138.8)	104.1 (3675.9)	60.4 (2138.7)
HC SAMPLE METER/RANGE/PPM	53.9/ 2/ 54	16.4/ 2/ 16	23.2/ 2/ 23
HC BCKGRD METER/RANGE/PPM	14.1/ 2/ 14	14.7/ 2/ 15	11.9/ 2/ 12
CO SAMPLE METER/RANGE/PPM	83.1/11/ 389	3.1/13/ 3	74.2/13/ 73
CO BCKGRD METER/RANGE/PPM	.8/11/ 2	.5/13/ 0	.6/13/ 1
CO2 SAMPLE METER/RANGE/PCT	46.1/ 2/ 2.07	69.6/ 3/ 1.26	90.5/ 3/ 1.69
CO2 BCKGRD METER/RANGE/PCT	1.3/ 2/ .05	2.9/ 3/ .04	2.4/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	53.4/ 2/ 54	14.4/ 2/ 14	27.7/ 2/ 28
NOX BCKGRD METER/RANGE/PPM	3.2/ 2/ 3	3.4/ 2/ 3	2.7/ 2/ 3
DILUTION FACTOR	6.36	10.65	7.89
HC CONCENTRATION PPM	42	3	13
CO CONCENTRATION PPM	346	2	69
CO2 CONCENTRATION PCT	2.03	1.22	1.65
NOX CONCENTRATION PPM	50.9	11.3	25.3
HC MASS GRAMS	1.47	.18	.45
CO MASS GRAMS	25.78	.30	4.86
CO2 MASS GRAMS	2246.3	2317.4	1834.2
NOX MASS GRAMS	5.41	2.07	2.69
HC GRAMS/KM (GRAMS/MILE)	.25 (.41)	.03 (.05)	.08 (.12)
CO GRAMS/KM (GRAMS/MILE)	4.46 (7.18)	.05 (.08)	.84 (1.35)
CO2 GRAMS/KM (GRAMS/MILE)	388.9 (625.7)	372.8 (599.9)	316.7 (509.6)
NOX GRAMS/KM (GRAMS/MILE)	.94 (1.51)	.33 (.54)	.47 (.75)
FUEL CONSUMPTION BY CR L/100KM(MPG)	16.93 (13.89)	15.92 (14.78)	13.59 (17.32)
CALCULATED DISTANCE KM (MILES)	5.78 (3.59)	6.22 (3.86)	5.79 (3.60)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.09 (.14)
CO GRAMS/KM (GRAMS/MILE)	1.18 (1.90)
CO2 GRAMS/KM (GRAMS/MILE)	360.73 (580.91)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.80)
FUEL CONSUMPTION BY CR L/100KM (MPG)	15.49 (15.19)

TABLE F-8. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 19
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/15/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-385-F
ODOMETER 1079

BAROMETER 746.25 MM HG(29.38 IN HG)
DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)

RELATIVE HUMIDITY 48 PCT
ABSOLUTE HUMIDITY 7.6 GM/KG(53.1 GRAINS/LB)

NOX HUMIDITY C.F. .9068

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H20(IN. H20)	1701.8 (67.0)	1701.8 (67.0)	1701.8 (67.0)
BLOWER INLET P MM. H20(IN. H20)	1524.0 (60.0)	1524.0 (60.0)	1524.0 (60.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	33.3 (110.0)	33.3 (110.0)	33.3 (110.0)
BLOWER REVOLUTIONS	10335	17787	10333
CVS FLOW STD. CU. METRES(SCF)	60.4 (2134.9)	104.1 (3675.2)	60.4 (2134.4)
HC SAMPLE METER/RANGE/PPM	62.2/ 2/ 62	13.6/ 2/ 14	23.4/ 2/ 23
HC BCKGRD METER/RANGE/PPM	10.8/ 2/ 11	9.8/ 2/ 10	9.2/ 2/ 9
CO SAMPLE METER/RANGE/PPM	90.3/11/ 448	6.0/13/ 6	85.9/13/ 86
CO BCKGRD METER/RANGE/PPM	.8/11/ 2	.8/13/ 1	1.4/13/ 1
CO2 SAMPLE METER/RANGE/PCT	45.6/ 2/ 2.04	20.9/ 3/ 1.27	33.9/ 3/ 1.76
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	2.4/ 3/ .04	2.5/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	49.8/ 2/ 50	11.8/ 2/ 12	27.2/ 2/ 27
NOX BCKGRD METER/RANGE/PPM	1.2/ 2/ 1	.9/ 2/ 1	.8/ 2/ 1
DILUTION FACTOR	6.42	10.52	7.57
HC CONCENTRATION PPM	53	5	15
CO CONCENTRATION PPM	421	5	81
CO2 CONCENTRATION PCT	1.99	1.24	1.73
NOX CONCENTRATION PPM	48.8	11.0	26.5
HC MASS GRAMS	1.85	.28	.54
CO MASS GRAMS	29.65	.59	5.67
CO2 MASS GRAMS	2205.0	2361.3	1911.2
NOX MASS GRAMS	5.12	1.98	2.78
HC GRAMS/KM (GRAMS/MILE)	.32 (.51)	.05 (.07)	.09 (.15)
CO GRAMS/KM (GRAMS/MILE)	5.12 (8.24)	.09 (.15)	.98 (1.58)
CO2 GRAMS/KM (GRAMS/MILE)	380.8 (612.8)	376.9 (606.4)	331.0 (532.6)
NOX GRAMS/KM (GRAMS/MILE)	.88 (1.42)	.32 (.51)	.48 (.77)
FUEL CONSUMPTION BY CB L/100KM(MPG)	16.69 (14.14)	16.10 (14.61)	14.21 (16.56)
CALCULATED DISTANCE KM (MILES)	5.79 (3.60)	6.27 (3.89)	5.77 (3.59)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	1.38 (2.21)
CO2 GRAMS/KM (GRAMS/MILE)	365.15 (587.52)
NOX GRAMS/KM (GRAMS/MILE)	.48 (.77)
FUEL CONSUMPTION BY CB L/100KM (MPG)	15.69 (14.99)

TABLE F-9. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 14
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 1 RUN
DATE 5/16/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-3R6-F
ODOMETER 1105

BAROMETER 745.74 MM HG(29.36 IN HG)
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

RELATIVE HUMIDITY 44 PCT
ABSOLUTE HUMIDITY 8.3 GM/KG(58.2 GRAINS/LB)

NOX HUMIDITY C.F. .9266

BAG RESULTS

	1	2	3
BAG NUMBER	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
DESCRIPTION			
BLOWER DIF P MM. H2O(IN. H2O)	1625.6 (64.0)	1625.6 (64.0)	1625.6 (64.0)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10359	17793	10354
CVS FLOW STD. CU. METRES(SCF)	61.4 (2169.1)	105.5 (3725.8)	61.4 (2167.9)
HC SAMPLE METER/RANGE/PPM	58.7/ 2/ 59	15.8/ 2/ 16	23.5/ 2/ 23
HC BCKGRD METER/RANGE/PPM	15.4/ 2/ 15	13.1/ 2/ 13	11.4/ 2/ 11
CO SAMPLE METER/RANGE/PPM	91.1/11/ 455	2.8/13/ 3	45.0/13/ 43
CO BCKGRD METER/RANGE/PPM	.7/11/ 2	.3/13/ 0	.1/13/ 0
CO2 SAMPLE METER/RANGE/PCT	46.4/ 2/ 2.11	72.3/ 3/ 1.31	95.5/ 3/ 1.79
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	2.4/ 3/ .04	2.4/ 3/ .04
NOX SAMPLE METER/RANGE/PPM	49.6/ 2/ 50	11.4/ 2/ 12	27.0/ 2/ 27
NOX BCKGRD METER/RANGE/PPM	1.3/ 2/ 1	1.0/ 2/ 1	.7/ 2/ 1
DILUTION FACTOR	6.21	10.21	7.44
HC CONCENTRATION PPM	46	4	14
CO CONCENTRATION PPM	428	2	41
CO2 CONCENTRATION PCT	2.06	1.27	1.76
NOX CONCENTRATION PPM	48.5	11.0	26.4
HC MASS GRAMS	1.62	.24	.48
CO MASS GRAMS	30.61	.29	2.90
CO2 MASS GRAMS	2320.4	2455.5	1473.1
NOX MASS GRAMS	5.28	2.06	2.87
HC GRAMS/KM (GRAMS/MILE)	.28 (.45)	.04 (.06)	.08 (.13)
CO GRAMS/KM (GRAMS/MILE)	5.26 (8.46)	.05 (.08)	.50 (.80)
CO2 GRAMS/KM (GRAMS/MILE)	398.5 (641.3)	393.9 (633.8)	339.8 (546.8)
NOX GRAMS/KM (GRAMS/MILE)	.91 (1.46)	.33 (.53)	.49 (.80)
FUEL CONSUMPTION BY CR L/100KM(MPG)	17.40 (13.52)	16.82 (13.99)	14.55 (16.17)
CALCULATED DISTANCE KM (MILES)	5.82 (3.62)	6.23 (3.87)	5.81 (3.61)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.10 (.16)
CO GRAMS/KM (GRAMS/MILE)	1.25 (2.02)
CO2 GRAMS/KM (GRAMS/MILE)	379.99 (611.41)
NOX GRAMS/KM (GRAMS/MILE)	.49 (.80)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.32 (14.42)

TABLE F-10. VEHICLE EMISSION RESULTS
FTPC

PROJECT NO. 11-4493-001

VEHICLE NO. 14
VEHICLE MODEL 79 MER MARQUIS
ENGINE 5.7 L(351 CID) V-8
TRANSMISSION A3
GVW 0 KG(-0 LBS)

TEST NO. 2 RUN
DATE 5/17/79
TIME
DYNO NO. 5
CVS NO. 7
BAG CART NO. 1

TEST WEIGHT 2045 KG(4500 LBS)
ACTUAL ROAD LOAD 8.9 KW(12.0 HP)
GASOLINE EM-386-F
ODOMETER 1116

BAROMETER 743.97 MM HG(29.29 IN HG)
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

RELATIVE HUMIDITY 51 PCT
ABSOLUTE HUMIDITY 9.2 GM/KG(64.7 GRAINS/LB)

NOX HUMIDITY C.F. .9537

BAG RESULTS

	1	2	3
BAG NUMBER			
DESCRIPTION	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	1618.0 (63.7)	1618.0 (63.7)	1618.0 (63.7)
BLOWER INLET P MM. H2O(IN. H2O)	1447.8 (57.0)	1447.8 (57.0)	1447.8 (57.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	43.3 (110.0)
BLOWER REVOLUTIONS	10365	17788	10347
CVS FLOW STD. CU. METRES(SCF)	61.3 (2164.8)	105.2 (3714.9)	61.2 (2160.7)
HC SAMPLE METER/RANGE/PPM	66.7/ 2/ 67	16.2/ 2/ 16	23.1/ 2/ 23
HC BCKGRD METER/RANGE/PPM	19.3/ 2/ 19	12.9/ 2/ 12	11.0/ 2/ 11
CO SAMPLE METER/RANGE/PPM	23.8/ 3/ 550	5.7/13/ 6	54.9/13/ 52
CO BCKGRD METER/RANGE/PPM	.3/ 3/ 7	1.9/13/ 2	1.0/13/ 1
CO2 SAMPLE METER/RANGE/PCT	96.8/ 2/ 2.10	71.7/ 3/ 1.30	96.6/ 3/ 1.82
CO2 BCKGRD METER/RANGE/PCT	1.5/ 2/ .05	3.1/ 3/ .05	3.5/ 3/ .05
NOX SAMPLE METER/RANGE/PPM	49.3/ 2/ 49	12.6/ 2/ 13	27.2/ 2/ 27
NOX BCKGRD METER/RANGE/PPM	1.9/ 2/ 2	1.8/ 2/ 2	1.7/ 2/ 2
DILUTION FACTOR	6.20	10.30	7.35
HC CONCENTRATION PPM	55	5	14
CO CONCENTRATION PPM	514	4	49
CO2 CONCENTRATION PCT	2.06	1.26	1.77
NOX CONCENTRATION PPM	47.7	11.0	25.7
HC MASS GRAMS	1.93	.30	.48
CO MASS GRAMS	36.65	.45	3.46
CO2 MASS GRAMS	2310.1	2419.3	1983.6
NOX MASS GRAMS	5.33	2.11	2.87
HC GRAMS/KM (GRAMS/MILE)	.33 (.54)	.05 (.08)	.08 (.13)
CO GRAMS/KM (GRAMS/MILE)	6.31 (10.16)	.07 (.12)	.60 (.96)
CO2 GRAMS/KM (GRAMS/MILE)	397.8 (640.1)	387.6 (623.7)	341.7 (549.8)
NOX GRAMS/KM (GRAMS/MILE)	.92 (1.48)	.34 (.54)	.49 (.80)
FUEL CONSUMPTION BY CB L/100KM(MPG)	17.45 (13.48)	16.56 (14.21)	14.63 (16.07)
CALCULATED DISTANCE KM (MILES)	5.81 (3.61)	6.24 (3.88)	5.81 (3.61)

COMPOSITE FTP RESULTS

HC GRAMS/KM (GRAMS/MILE)	.12 (.19)
CO GRAMS/KM (GRAMS/MILE)	1.51 (2.43)
CO2 GRAMS/KM (GRAMS/MILE)	377.13 (606.80)
NOX GRAMS/KM (GRAMS/MILE)	.50 (.81)
FUEL CONSUMPTION BY CB L/100KM (MPG)	16.21 (14.51)